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Gene Wolfe
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Plan[e]t Engineering commemorates Gene Wolfe's appearance as Boskone XXI Guest of Honor. It contains a wide range of works displaying his multifaceted writing talents. Included are stories, essays and poems; plus the first ever publication of a map from the world of *The Book of the New Sun*. Among the writings included are:

† "The Books in *The Book of the New Sun*", a new essay about that world;

† "The Rubber Bend", the funniest detective pastiche ever;

† "The Computer Iterates the Greater Trump", the Rhysling Award winning poem;

† "In Looking-Glass Castle", winer of a 1981 Illinois Arts Council Award;

† "The Detective of Dreams", an unrecognized masterpiece;

† "The Anatomy of a Robot", a technical work about the robots in our everyday world;

and much more. Also included is an introduction by David G. Hartwell, Boskone's Special Guest this year and editor of *The Book of the New Sun*.

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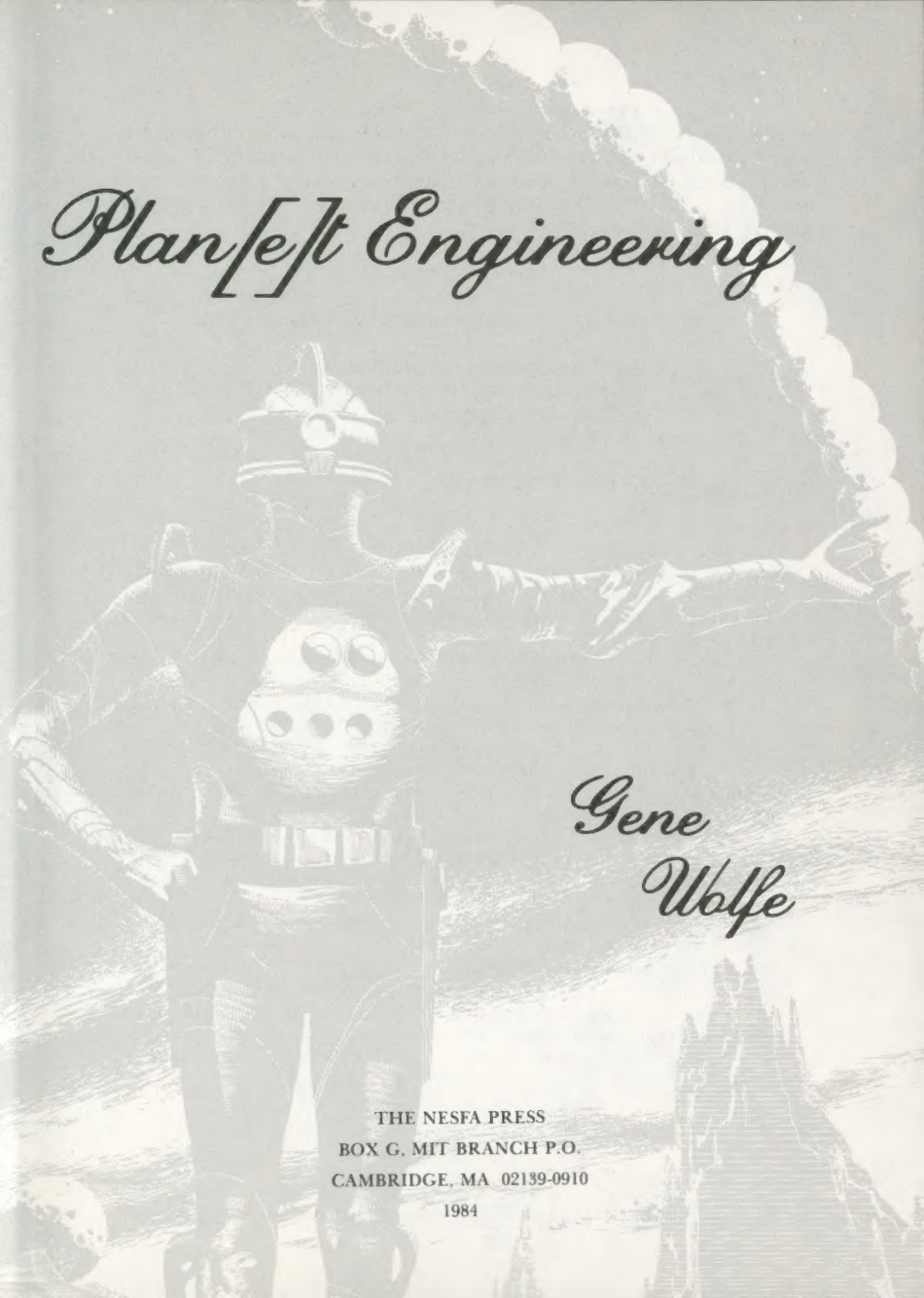

Gene Wolfe

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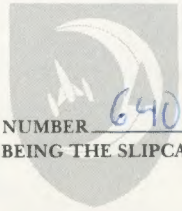

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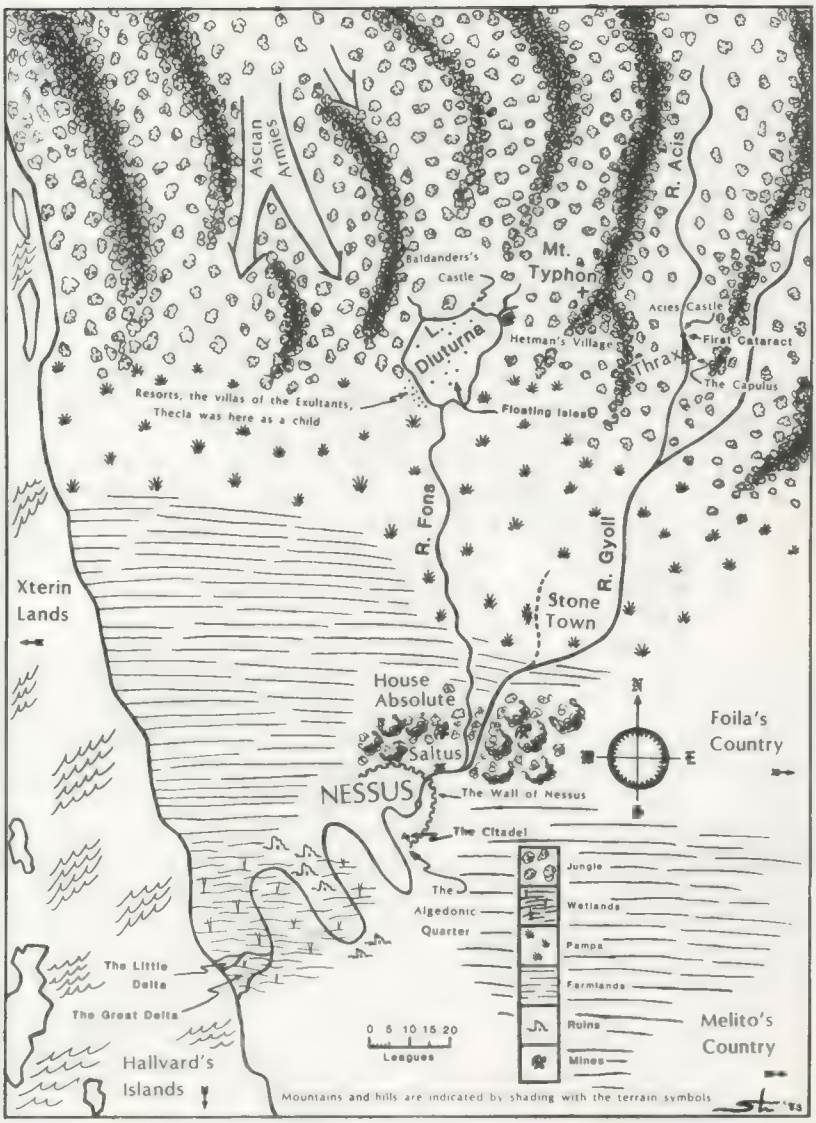
To Rosemary, because she comes
down for coffee,
because she wants to be with me.



Northwest Area of the Commonwealth

Acknowledgments

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Greg Thokar, Editor
Cambridge, Mass.
5 AM, Saturday
December 3, 1983

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Gene Wolfe

I have been told that years ago in the early seventies, there was a complex and silly game played one night among the attendees of the famed Milford SF Writing Conference. Reports differ, but my sources tell me that Gene Wolfe beat out Gardner Dozois that evening for the title of writer whose everyday personality seems to relate least to his written work. History has blotted from memory why this was a game-point at issue in the first place, but everyone afterward used to nod wisely and say, "true, true,"... after all, Gardner the clown writes long intense stories of grim, hard-won optimism, and genial Gene Wolfe, the Midwestern businessman, acts very much like the kind of adult you would like to grow up to be if you had not been made irrevocably maladjusted by overexposure to SF. Not long ago, the only people who knew much about Gene Wolfe were his fellow writers, and many of them, if not most, could tell right away from those early stories in Damon Knight's *Orbit* that he was a writer of such prodigious talent and craft as to be a mite scary. Who is he and where has he been and how did he get to be so damn good? And so we play party games.

But I owe to Gardner Dozois the observation that in physical description Gene is a dead ringer for Dashiell Hammett's Continental Op. He is of average height, over forty, vigorous, balding, bull-necked, alert, dressed in a suit—a professional. That image of the working undercover agent has always appealed to me as perhaps the best persona a writer can have. Others respond merely to the outer disguise, while the mind at work inside is freed to be its own strange self, to get its work done.

One tends to invent one's own Gene Wolfe, a grave omniscient persona with the voice of Orson Welles, who tells us disturbing stories such as "The Fifth Head of Cerberus" or "The Death of Doctor Island" or "The Hero as Werwolf." Yet that version of Gene Wolfe melts and evaporates in the face of the cheerful, gentle, convivial wit we meet at conventions, that podium trickster, jokey and entertaining. So Gene Wolfe preserves his independence. All we need to know is what is quickly apparent to the reader of the works: that Gene has the true speculative mind, skeptical, knowledgeable, open, wondering, which is the hallmark of the true SF person, of all our best writers.

Gene Wolfe entered the SF field as a professional in the 1960's and is of the generation of Joanna Russ, Thomas M. Disch, Roger Zelazny, Samuel R. Delany, and Ursula K. Le Guin. Yet he was somehow not truly discovered by the majority of readers until 1980, with the publication of the first volume of *The Book of The New Sun: The Shadow of the Torturer.* I had the good fortune to be the editor responsible for the publication of that book and I have never in my career seen such an avalanche of immediate praise mingled with a kind of awe. Perhaps in the end he will have done more to raise authors' sights toward a higher level of accomplishment in SF than any of his aforementioned contemporaries, for his best work is word perfect (as an example, as editor of the Nebula Award-winning novel, *The Claw of the Conciliator,* I finally found one single word change to suggest in the entire manuscript after two careful readings). Still, his recent surge in popularity and the comparative scarcity of his earlier works means that he is known to many readers only as the author of *The Book of the New Sun.*

This present volume, then, (along with the recent collection, *The Island of Doctor Death and Other Stories and Other Stories*) should serve as an introduction to the many and varied delights in store for you among Gene Wolfe's works. Herein we have Gene Wolfe the poet, the essayist, the humorist, the storyteller (at least one story in this book, "The Detective of Dreams," I consider a generally unrecognized masterpiece). And let me add that I think Gene Wolfe's most underrated

strength is his deadpan wit, here in abundance in this collection. I know that you will be entertained and I believe that you will be impressed by the range and craftsmanship.

I bow, as an editor should, before the author.

You're on, Gene....

David G. Hartwell

Logology

You're holding the fourth collection of my stories. In the first, *The Island of Doctor Death and Other Stories and Other Stories,* the stories were chosen by David Hartwell. In the second, *Gene Wolfe's Book of Days,* Pat Lo Brutto let me choose. In the third, *The Wolfe Archipelago,* Mark Ziesing and I agreed to let the stories choose themselves.

This book is different (and better) because the stories have been chosen for you by a jury of readers, all of them members of the New England Science Fiction Association. If such readers as those do not know what is good, then *good* has no meaning.

With the stories they have included one of my technical articles and three of my poems. I hope you won't skip those. "The Anatomy of a Robot" contains a little glossary of robotspeak that gave me a great deal of pleasure when I researched and wrote it. I hope it will give you pleasure too; the robots are coming, and they're fun guys. "British Soldier near Rapier Antiaircraft Missile Battery Scans for the Enemy" is about the way the popular media use words to disguise the truth of science fiction even when a science fiction picture leaps off the page. (The caption should have been something like "Royal guardsman beside rocket gun watches for Dagger jets.")

"Last Night in the Garden of Forking Tongues" tells of a night when half the people in an audience insisted on trying to speak Spanish, which they could not speak, to a genius who speaks excellent English. And "The Computer Iterates the Greater Trumps"

(which I wrote about twenty years ago) combines ancient and modern word magic.

It's possible to argue that all these are about words, or that any tale or article or poem is about words (though it would also be possible to argue that they are about other things just as easily—two of the poems are surely about pictures, for example). And I confess I am intrigued by words, as the essay I have written for this book, "Books in *The Book of the New Sun*," will prove only too well. It may do me no great good to know I'm eating a sausage from the place where the ax-men cross the river when I eat a frankfurter at lunch, but it makes my hotdog taste better.

One of these stories, "A Criminal Proceeding," is partly about names, mostly the names I see mentioned once in newspaper articles, names the writer of the article seems to think I already know. The roots of names interest me even more than the roots of other words. Did you know that Larry Niven is the Man from the Snows of Laurentum, or that Kate Wilhelm is the Pure Woman With the Desirable Helmet? In a thousand years, people may have science fictional names like Dr. Westing's, but now nearly all of us have legionary or warrior or high fantasy names of one sort or another. My own means a Wolf Is Born. If you know me (and I hope you will by the time Boskone's over) you won't be able to see the barbarian armies streaming toward Rome when you read that, but they are there. David Hartwell is the Beloved Man From the Spring Where the Deer Come to Drink, which is even better. But Vincent Di Fate (have a look in the art show) is the Liege of the Conqueror From Faerie, which is best of all.

You don't have to keep all this in mind to enjoy my stories and poems (or anyone else's), and yet it may help, and I hope you do. Now have a good time at Boskone.

Wait a bit! There's more, as Dr. Talos would say. I should mention Greg Thokar, who edited this book. Gregory is Vigilant, but if you know what Thokar means, you know more than I. Perhaps he'll tell us.

Oh, and I forgot to tell you about the chairman, Rick Katze. And I'm not going to, not really. To find out about Rick, you have to read a certain story by Stephen Vincent Benét. (Ask the hucksters for Damon Knight's *The Golden Road*.)

Gene Wolfe

Plan[e]t Engineering

Books in The Book of the New Sun

"*We have books here* bound in the hides of echidnes, krakens, and beasts so long extinct that those whose studies they are, are for the most part of the opinion that no trace of them survives unfossilized. We have books bound wholly in metals of unknown alloy, and books whose bindings are covered with thickset gems. We have books cased in perfumed wood shipped across the inconceivable gulf between creations—books doubly precious because no one on Urth can read them.

"We have books whose papers are matted from plants from which spring curious alkaloids, so that the reader, in turning their pages, is taken unaware by bizarre fantasies and chimeric dreams. Books whose pages are not paper at all, but delicate wafers of white jade, ivory, and shell; books too whose leaves are the desiccated leaves of unknown plants. Books we have also that are not books at all to eye: scrolls and tablets and recordings on a hundred different substances. There is a cube of crystal here— though I can no longer tell you where—no larger than the ball of your thumb that contains more books than the library itself does."

Which is a paradox, to be sure, since Master Ultan's library

contains the crystal and is itself the Library, or perhaps the Bibliotheque, of All Books. What does it mean?

Primarily, it seems to me, that the library is folded in upon itself like a Klein bottle, though in a more profound sense. This folding in of the library, this sense that the library is larger than the world that contains it, is modern as far as I know. And yet there is some flavor of the ancient about it, of books that have not been read since before they were written, of the worm and the dust. Jorge Luis Borges's "The Library of Babel" has rightly been called Kafkan in its sense of enormity and oppression: "In the entrance way hangs a mirror, which faithfully duplicates appearances. People are in the habit of inferring from this mirror that the Library is not infinite (if it really were, why this illusory duplication?); I prefer to dream that the polished surfaces feign and promise infinity..." But both Kafka and Borges are twentieth century writers. Since the wrong direction is so often found to be the right direction in the end, let us begin by looking in the wrong direction for the meaning of this modern notion: backward to the words themselves.

Bibliotheque comes to us from the Latin *bibliotheca*, a library, or perhaps (more directly) from *bibliothecula*, a small collection of books. (You can see that French *qu* in the *cu*.) But there are meanings behind the meaning: *biblius* is papyrus, an Egyptian reed, and *theca* is a case, a cover, an envelope, that which envelops and contains. Surrounded by our little collection of books, then, we sit in the midst of a swamp on the Upper Nile. The green and slender tongues of the papyrus, higher than our heads, whisper about us in their millions of millions as they whispered before time was invented in the town we now call El Kab (anciently Nekheb) near Thebes. And though we cannot see them, we know they whisper of crocodiles.

Library takes us to Europe and that vast European forest of which only the traces of the traces remain, but that marked so many of us so much more than we realize, giving to those who dwelt there blue eyes and white, paper-like skin, eyes and complexions suited to skulking through its green shades.

For that word *liber* is only "bark," the inner bark of those ghostly

trees, upon which the first books known to the inhabitants of Latium were written. Our little library, then, is a forest too, a place of bark. The very paper of our books is made from the wood of countless trees; the word *book* itself means *beech*, and the innumerable leaves of those beeches whisper forever in our minds. I said a moment ago that only the traces of the traces of that ancient forest remain. But that forest, which we call by custom vast, was really not so vast after all. It covered what are now France, Germany, England, and Poland, with a few other countries and parts of a few more, such as Italy—only a small fraction of the land area of this inconsiderable planet of ours. (The largest forest of our world is still existent, though most of us have never heard of it. It is the Taiga of Siberia, and with an area of about three million square miles it is nearly as large as the whole of Europe.)

Yet among the traces of the traces we must count the world of books, and that world is already larger by far than the original forest that gave it birth, and it is growing larger every day.

Now having glanced toward the past, let us look to the future. In *The Sword of the Lictor*, Dr. Talos says, "Look about you—don't you recognize this? It is just as he says!"

"What do you mean?" Severian asks.

"The castle? The monster? The man of learning? I only just thought of it. Surely you know that just as the momentous events of the past cast their shadows down the ages, so now, when the sun is drawing toward the dark, our own shadows race into the past to trouble mankind's dreams."

What shadow is this? At present our history extends back about five thousand two hundred years. (Pharaoh Menes ruled in Nekheb in 3200 BC.) Let us assume that humankind and civilization as we know it endure ten percent longer than they have already, that is, for another five hundred and twenty years. Roughly thirty thousand *titles* are now being published every year. (*The Literary Market Place* lists one thousand four hundred and fifty *trade* publishing companies for 1982, and there are another six thousand or so publishers who are not

trade publishers; you are now reading a book produced by one of them—a title that is probably not even included in the thirty thousand.) Let us also assume that the number of titles published each year does not increase, though it has tended to increase throughout most of history. By those assumptions, another five hundred and twenty years will produce fifteen million six hundred thousand new titles.

Suppose that by 2504 the span of human life has increased sufficiently to give a scholar a career of a hundred years. Suppose that during his hundred-year career this centenarian scholar reads a book every day. He will read thirty-six thousand, five hundred and twenty-five books, or less than three percent of new books produced since our time. Imagine then what the situation will be in Severian's time for the scholar-heirs of a sequence of civilizations that may be over a million years old.

But you already have. All of us already have, I think, and that is the shadow that has come to haunt us. Critics and reviewers (perhaps the most fallible of men) speak of a certain book's dying. If you go to the huckster room in which you bought this excellent book and talk to the dealers a bit, you will discover that few books ever do. (Undoubtedly, many titles we would very much like to have for our collections were lost forever when Caliph Omar ordered the three hundred thousand volumes in the Serapeum burned to heat the public baths of Alexandria; but astonishingly little has been lost since. We have several manuscripts of *Gilgamesh,* for example, a sword-and-sorcery novel more than five thousand years old.) The rarer a book becomes, the more zealously the existing copies are guarded, and when a book is sufficiently old, it is likely to be reissued, and certain to be microfilmed, simply because of its age.

But if we were to say all this to Master Ultan, he would only laugh. He must deal also with books imported from other worlds, books that are often in strange forms, as we have seen. The experience of the conquistadores in the New World of Earth should serve as a warning to us; in Peru, they found books written by knotting string. These,

like so many of the books in Master Ultan's library, are books no one can now read.

Two hundred years ago, Dr. Johnson said that a man would turn over half a library to make one book. Today, no one could possibly turn over half of any one of the many thousands of large libraries on Earth. In the future the task of turning over large libraries will have to be left to computers; and those of us who have trouble getting to sleep, as I do, can amuse ourselves with the image of those mainframes of the coming decade, equipped with optical character readers and book-feed and page-turning mechanisms, reading, reading through the night. (Cyriaca speaks of the ultimate fate of these computers and the books they will read in *The Sword of the Lictor:* "When the last machine was cold and still and each of those who had learned from them the forbidden lore mankind had cast aside was separated from all the rest, there came dread into the heart of each. For each knew himself to be only mortal, and most, no longer young. And each saw that with his own death the knowledge he loved best would die. Then each of them—each supposing himself the only one to do so—began to write down what he had learned in the long years when he had harkened to the teachings of the machines that spilled forth all the hidden knowledge of wild things. Much perished but much more survived, sometimes falling into the hands of those who copied it enlivened by their own additions or weakened by omissions... Kiss me, Severian.")

The library, or at least the large, public library, has ceased to be a place for human beings and become a place for machines. We humans are now confined to the little library, to the bibliotheque or small collection of books; so let us examine what I believe is the only truly small collection to be found in *The Book of the New Sun*, the four volumes that Severian brings to Thecla in *The Shadow of the Torturer*. In the chapter titled "The Master of the Curators," Master Gurloes, you will recall, writes a note to Master Ultan:

"'By the will of a court we have in our keeping the exulted

person of the Chatelaine Thecla; and by its further will we would furnish to the Chatelaine Thecla in her confinement such comforts as lie not beyond reason and prudence. That she may while away the moments until her time with us is come—or rather, as she has instructed me to say, until the heart of the Autarch, whose forebearance knows not walls nor seas, is softened toward her, as she prays—she asks that you, consonant with your office, provide her with certain books, which books are—'"

"You may omit the titles, Cyby," Ultan said. "How many are there?"

"Four, sieur."

"No trouble then. Proceed."

"'For this, Archivist, we are much obligated to you.' Signed, 'Gurloes, Master of the Honorable Order commonly called the Guild of Torturers.'"

"Are you familiar with any of the titles on Master Gurloes's list, Cyby?"

"With three, sieur."

"Very good. Fetch them, please. What is the fourth?"

"*The Book of the Wonders of Urth and Sky*, sieur."

A few pages later in the same chapter, Severian describes two of the four, neither of which is *The Book of the Wonders of Urth and Sky:*

One of the three volumes Cyby had brought was as large as the top of a small table, a cubit in width and a scant ell in height; from the arms impressed upon its saffian cover, I supposed it to be the history of some old noble family. The others were much smaller. A green book hardly larger than my hand and no thicker than my index finger appeared to be a collection of devotions, full of enameled pictures of ascetic pantocrators and hypostases with black haloes and gemlike robes. I stopped for a time to look at them, sharing a

little, forgotten garden full of winter sunshine with a dry fountain.

That paragraph is full of the "funny words" I have often been taxed with using; so for the benefit of those of you who have not seen *The Castle of the Otter,* I would like to quote some of the definitions given there:

Saffian: a leather made from goatskin or sheepskin (goatskin is better) and tanned with sumac. It is often dyed in bright colors.
Ascetic: uninclined to Urthly pleasures.
Pantocrators: those who have mastered the physical. Also, incarnations of the Pancreator. Those fit for spiritual and philosophical "wrestling." Originally, the word designated what we would call all-around athletes; but its figurative meanings have overwhelmed its literal ones.
Hypostases: the persons whose union constitutes the Increate.

It seems to me that we can reasonably make two assumptions about these four books. The first is that they are books Thecla might reasonably ask to borrow, and the second is that they all must have something to do with Severian. Note, for example, that the pictures in the book of devotions are enameled and that Severian will soon encounter Dorcas; Dorcas comes from a family once engaged in the manufacture of cloisonne, and she once lived in a shop where it was sold. Cloisonne is a colored decoration of enamels. In the rest of this essay, however, I will concentrate on the first assumption, not wishing to deprive you of the legitimate pleasure of deducing the connections.

The large book, which is so big that Severian, in Chapter VII, cannot slip it through the slot intended for food trays, is almost certainly a history of Thecla's own family, its wide pages occupied by genealogical charts. (If she had been at the point of marrying at the time of her arrest, it might conceivably have been that of her

husband-to-be's; but since she never mentions a future marriage, we may assume none has been arranged.) This book, then, leads us to ask who the exulted families are and what it means to be an exultant.

In the time of Severian, the Commonwealth is a poor country growing poorer. Its economy is based on agriculture, on small farms like the one from which Melito has plainly sprung and ranches like the one from which Foila must have come. If you look at the map in this book, you will see the farmland to the north and west of Nessus, where the lowlands receive the greatest amount of rain and the rain can be supplemented with irrigation from the River Gyoll and its tributaries. It is grain from these farms and water from Gyoll that keep Nessus alive, of course. Although so much of the city is deserted, like the ruins Severian sees as he journeys up the river on the *Samru*, and much of it is only thinly inhabited, like the district to which Dorcas goes when she leaves Severian, there are still many districts (largely to the north) that are home to millions of people.

And yet these millions are only a remnant of those who once lived in Nessus. The pampas are encroaching year by year upon the farmland, and in time the pampas will turn to deserts. As Urth's sun cools, more and more of Urth's water is being tied up in its glaciers, and less and less is entering the atmosphere from its cooling and increasingly ice-covered seas. Eventually, as Severian sees in the house of Master Ash, the glaciers may come down from the mountains. By that time there will be few to mourn their coming in the once-fertile lands about Nessus.

In such a society as this, poor and relatively stable over hundreds of years, power becomes concentrated in particular families. Because we have the word *economics* and the word *politics*, and no word to mean the two together, we think of them as completely different things. The fact is that their interaction is more than strong enough to justify our calling them one thing, just as we call education (in which the student interacts so strongly with the institution, although we have no word for his action upon it or its action upon him) one thing.

Change, Wealth, and War are the great democrats. Change means

that yesterday's solutions will no longer work on today's problems. Wealth, that education can be made available even to the poor. War means death for a generation of the aristocratic officer class that is expected to lead the troops, and brings change (and often wealth) with it. The great Russian and German aristocratic systems were destroyed by World War I. In England, the wealth created by industrialization (England was the first industrialized nation) stripped the aristocracy of all but the trappings of power, so that wealthy nobles today are noble because they are wealthy, and not wealthy because they are noble. The changes introduced by contact with the West toppled the Chinese Empire and ended the power of the Japanese aristocracy.

Conversely, Stagnation, Poverty, and Peace are the creators of aristocracy. Reviewers of *The Book of the New Sun* often say they are surprised to find a "medieval" or "European" aristocracy governing the countryside. The truth is that there is nothing particularly medieval or European about such aristocracies—they evolve everywhere when conditions are right for them for a period long enough for them to develop.

I grew up in Texas, which was a wilderness a hundred and fifty years ago but now has a fairly well developed ranching aristocracy. Ranches are passed from father to son, and cattle brands are used as coats of arms were in the middle ages and as each (great) family's *mon* was in feudal Japan. Landless imitators of the aristocracy are said to be "all hat and no cattle"; it is surprising how seldom Easterners recognize, in the wheelin', dealin', bellerin' Texas millionaire they joke and complain about, the brawling nobleman in embryo.

In the USSR, it is already noticeable that the managerships of collective farms remain in families and are frequently passed from father to son. This is, of course, not a matter of Soviet policy but of expediency. Managers sent out from Moscow return to Moscow at the first opportunity, while the established local manager can use his political connections to get his son a superior education and use his

own position to train him in administrative duties that are basically unchanging.

When the manager dies, his son is on the spot and clearly the person best qualified to administer the farm. It is pointless to protest that he does not "in fact" own the farm, which belongs to the Soviet Government, which (in theory) administers it as the deputy of the Proletariat. The noble of the high middle ages did not (in theory) own his estate either. He held it from the king in return for feudal service that was seldom given, and the king in turn held the whole country as the vassal (this word originally meant "servant boy") of God. This is not to condemn (or praise) Soviet society; I am merely saying—no, insisting—that certain social patterns will emerge when conditions are favorable to them, just as the availability of certain types of musical instruments will result in the composition of certain types of music.

In aristocratic societies inheritance is the best way of getting money, and the reliance on it strengthens the bonds of blood. If you do not help your relations, they may leave their money to someone else or influence other relations to disinherit you. Thecla's concern for her family and its history is thus entirely logical and practical. Her best chance of release is through the influence of her relatives.

The second book Severian describes is a euchologion or formulary of prayers, and our opinion of its practicality depends on our opinion of the efficacy of prayer and the reality of the deity addressed. In America today, the first question is (properly, I think) left to private belief. We may pray or not, as we choose. And if we choose, we can believe in the existence of a deity, but choose not to pray, like the character in one of L. Sprague de Camp's Krishnan novels who feels that the gods are most apt to favor those who refrain from pestering them. Or we may pray without belief in any deity on the grounds that it does no harm and it is possible we are mistaken. This last has always struck me as the only logical choice for an agnostic, and I would more than suspect that Thecla prayed in this fashion, were it not for the nature of one of the remaining books.

If she addressed her prayers directly to the deity and not to some

intercessor, the deity involved was probably the Increate. The designation is derived from the most common argument for the existence of God. Briefly, it is this: To all tangible objects we can assign some cause; individuals are the children of some parents, for example, though we may never have known those parents. Similarly, animals are derived from earlier animals, and plants from the seeds of earlier plants. Stones are spontaneously engendered in the earth, rivers rise from springs, springs are born of rain, rain descends from clouds, clouds condense from air, air is brought by wind, and so on indefinitely.

However, the chain of causation cannot be infinite, because an infinite universe would be required to contain it, and for that infinite universe there is no cause. Therefore, at the end of the chain of causation there must be some being that created all the rest by creating beings that created others; and this being we will call the *Increate*—that which is not itself the creation of another.

That is the name most commonly used in *The Book of the New Sun.* In *The Shadow of the Torturer,* Chapter VII, Master Gurloes says, "But with the passage of time I have come to understand that the Increate, in choosing for me a career in our guild, was acting for my benefit. Doubtless I had acquired some merit in a previous life, as I hope I have in this one." Although Master Gurloes is an old hypocrite, this speech of his tells us a good deal. The Increate is thought to govern the course of human lives; yet human beings are believed to possess a free will, since they could not acquire merit without one. Perhaps most important, the people of the Commonwealth believe in reincarnation.

Perhaps we should also note here that there seems to be a belief in luck, chance, or fate as well, though not wholly apart from the Increate. In Chapter XIV, when Master Palaemon gives Severian the sword *Terminus Est,* he says, "May the Moira favor you, Severian." *Moira* in this sense means a sacred lottery—luck as an instrument of deity.

We should note, too, that *Increate* is only one of several "names"

used to refer to the Ultimate Power. The sweepsmen Severian hears as he trudges up the Water Way in Chapter XIV use ours, singing:

> Row, brothers, row!
> The current is against us.
> Row, brothers, row!
> Yet God is for us.
> Row, brothers, row!
> The wind is against us.
> Row, brothers, row!
> Yet God is for us.

Their song shows that *God* may also be in common use, if only among slaves and the very poor. However, it is possible that the word is preserved only in this immemorial rowing chant. In the entire length of *The Book of the New Sun* I believe it occurs only there, although Severian hears the song again in *The Citadel of the Autarch,* in Chapter XXXIII, when the crew of the *Samru* rows him up Gyoll.

One more point seems worth observing. It is that the sweepsmen appear to believe that adversity itself can be a sign of the favor of the deity. And how can you argue with them? If the wind and current were always with their vessel, no sweepsmen would be needed.

I am occasionally asked to translate the Latin (that is to say, they are given as Latin in my translation) inscriptions on the sundials in the Atrium of Time, which Valeria mistranslates. They are *Lux dei vitae viam monstrat; Felicibus brevis, miseris hora longa;* and *Aspice ut aspiciar;* and they mean "The light of God shows the road of life"; "Happiness is brief, misery's hours long"; and significantly, "Look at me so that I may be looked upon," which Valeria does not translate. Before we leave these old dial mottos, it may be well to quote Valeria'a mistranslation of the first. It is "The beam of the New Sun lights the way of life."

Which brings us back to the enameled pictures. Who are those

pantocrators? If human beings are reincarnated, are they thus greater than the Increate?

Briefly, in the time before Ymar was Autarch, when the sun had begun to cool, there appeared on Urth a man now called the Conciliator, an intercessor and mediator who healed the sick and attempted to teach the people; his stories form what is now called *The Book of the New Sun.* It is thus titled because the Conciliator promised that in time he would return bringing Urth a new sun. (Dr. Talos has seen this "lost" book and based his play "Eschatology and Genesis" upon it.) In his second appearance, the Conciliator is thus called the New Sun.

Of the remaining books I need say little. The book Ultan finds for Severian is of course *The Book of the Wonders of Urth and Sky,* which Severian carried with him on his wanderings as a memento of Thecla. One reviewer has called it a sort of future science-fiction anthology. The truth is that it would be more accurate (though not entirely accurate) to call it a future *Bulfinch's Age of Fable or Beauties of Mythology,* It was, as Master Ultan tells Severian "a standard work, three or four hundred years ago." He goes on to say, "It relates most of the familiar legends of ancient times. To me the most interesting is that of the Historians, which tells of a time in which every legend could be traced to half-forgotten fact." In writing the legends, I have supposed facts and old stories to have become confused with others, a rascally technique that has earned me at least one vehement accusation of plagiarism. Thus, for example, the custom of an academic thesis is confounded with the legend of Theseus in "The Tale of the Student and His Son."

The fourth book, as the astute reader will have guessed long ago, is *The Book of the New Sun* itself. And now we are come again to the notion of recurrence, of the library folded in upon itself like the Klein bottle. This notion of recurrence seems to me to circle our Earth (you may spell it as you like) like the Midgard serpent, which clasps its tail in its mouth and is brother to the wolf Fenris. For the library of Master

Ultan is in *The Book of the New Sun,* and *The Book of the New Sun* is in his library. And you are the readers of that book.

In Looking-Glass Castle

"*I'm glad you're new* to Florida," the real estate agent said, "because this place is such a treat. It's nice to be able to give somebody that kind of welcome." She looked across at Ms. Daisy McKane and smiled. She was quite good-looking, Ms. McKane thought, tanned and freckled—though perhaps a little too old.

"Florida has been a treat already," Ms. McKane said, trying to put a slight emphasis on the fourth and fifth words. "So nice. I've met such lovely people."

Her left hand was beside her leg, where the agent could touch it easily if she wished. She did not. Ms. McKane looked out the window at the dreary landscape of palmetto and swamp grass baking under the noonday sun. "Are you certain your batteries are up?" she asked after a time. She had a horror of running down on a lonely road, and so many roads were lonely now.

"Brand new and freshly charged," the agent announced cheerfully. "Nothing to worry about. Florida is easy on cars anyway, since they've gone to fiberglass bodies. The salt air used to corrode the aluminum ones something awful. A sort of sickly white dust. Where did you say you worked?"

"Cape Rose."

"I mean where at the Cape, Ms. McKane?"

"I really don't think I should tell you that," Ms. McKane answered primly. She had her doctorate now, and it irritated her that she could not use the title outside.

"Oh, I'm no spy." The agent giggled, and Ms. McKane decided she was not as attractive as she had first thought. Celibacy is best, she told herself. It always has been.

"I've heard that up north there are sympathizers all over."

"I really wouldn't know."

They swung off onto a new road. An old and battered tin sign announced WEST COCOA BEACH/POP 15,000. "Don't pay any attention to that," the agent said. "It isn't right. More like twelve thousand." (Even that was probably a lie, Ms. McKane thought.) "Do you have a car? You'll need one. I have a friend in the business, and I'll give you her card."

"It's being shipped down by rail," Ms. McKane said. "I see a lot of these houses are for sale." They were shabby bungalows for the most part, half strangled by their subtropical plantings.

"You can get three times the house for no more than they're asking for these," the agent assured her. "That's what I'm taking you to see."

The little car turned a corner and jolted to a halt. Ms. McKane looked out. The house was...stately. There was no other word for it. Two stories, and dormer windows that indicated a finished attic. The lot was twice as large as the others. The grass was high and wild now and the house needed a little paint, but just the same...

"Seventeen thousand five hundred," the agent said. "With your job the bank won't ask for a down payment, though you can give them one if you like."

"I could never furnish this place," Ms. McKane said as she climbed out of the car. "Never."

"There's furniture already; it goes with the house. Keep what you like and throw the rest out."

"Really?" Ms. McKane turned to look at her, but she was already skipping up the steps.

"Really. Old furniture's worth practically nothing today, you know. Not unless there are real antiques."

A fat woman in a printed suit was watching them from the lawn

of the house on the other side of the street. When Ms. McKane looked at her, she shook her head and turned away.

"That's another advantage. You'll have neighbors on both sides and across. Handy in case you get sick or something. People here are neighborly."

The front door squeaked open, and a blessed wave of coolness enveloped them. Ms. McKane stepped inside, looking at the fireplace and the graceful Queen Anne sofa. "It's lovely, and so cool."

"I mentioned at the office that I was going to show it," the agent said. "Nora was going out this way, and she must have stopped in and turned on the air conditioning for us."

In the kitchen Ms. McKane said, "It's so big. I wonder if I can find someone to live here with me."

Sale. The agent relaxed and smiled. "You should have yourself cloned. I mean, if you haven't already—"

Ms. McKane shook her head.

"—I mean, look at this woman. She hadn't, and she drowned and had to give all this up. They just scrape some cells from inside your cheek, you know."

"Unless I can find someone to share the house, there'd be no one to look after the baby." Ms. McKane was practical.

A gum-chewing teenager delivered her car the next day, and Ms. McKane drove her back to the station. "It's an old one, isn't it?" the girl asked.

Ms. McKane nodded absently. The car's hunched black sides, which had seemed so reassuringly strong in Boston, looked out of place in the brilliant sun. Were they aluminum? Ms. McKane could not be sure. "How far is the ocean?" she asked the girl. "In a direct line, that is." The house's former owner had drowned.

"Ten miles, I guess."

This was foolishness. The Cape was right on the coast anyway, and her car would be parked there six days a week.

On the way to the house she bought groceries, staple goods: flour,

sugar, coffee, and canned goods. Had there been pans? She could not remember, and bought an inexpensive saucepan and a coffeepot. She had spent the night in a motel, nice but much too costly, even now in the off-season. That's over with, she thought. I'll camp in the house until I find out what I need to make the place comfortable.

As it turned out, she needed very little. There was already a copious supply of linens, and pots and casseroles and spatulas and so on in abundance—even some food. I could have stayed here, she said to herself, and saved the money. I'll get a cat and perhaps a dog, too. Have them spayed—or maybe not.

She turned on the television, and it filled the lower floor with solemn sound while she put away her purchases. A newspaper lining a drawer announced PIG HUNTED. It was six months out of date, but she read it anyway. He was thought to be hiding in the Everglades; the article had a great deal to say about the difficulty of searching the Everglades and very little to say about him. Where were they? Down south, she thought, a long way from here. She saw pictures of men so often on the news that she had trouble remembering the last one she had seen in the flesh. She had been a child, surely.

That night she read the *Journal of Mathematics* with the TV mumbling unattended in the background, and went to bed. She slept badly, then spent a fatiguing day at the Cape getting acquainted with her co-workers. On the following day she went to work in earnest. It was Sunday before she had time to poke around the house.

It was uncomfortable as a garment too large is uncomfortable by its very looseness. She had felt big and clumsy in her tiny Boston apartment. Now she herself was tiny, without force, without impact on this hulking structure. She made noise for the sake of noise and found herself wondering, while she did her laundry, if someone was pounding her front door. Her heart thumped at the soughing of chill wind in the air-conditioning vents. She seemed to be eating too much and felt sure it was in a subconscious effort to grow larger.

The owner before her—Jane Something, it had been on the

deed—had been an eccentric. Or perhaps, Ms. McKane thought, an eccentric is anyone who dies leaving a chance to clean up. She had saved empty seed packets from the little garden behind the house, and there were five pairs of very similar scissors in her sewing basket. Her clothes were mostly gone, or she had owned very few. There was an album of photos, with no way of telling which were of her. Possibly none were. The few remaining clothes testified that she had been tall and thin; a hairbrush showed pale brown hair before Ms. McKane threw it out. Jane rolling dead, naked in the surf.

The bookcase in the living room held standard authors: Austen, the Brontës, Willa Cather, Edna Ferber, George Sand, *Frankenstein*.... Ms. McKane was about to turn away when she glimpsed something behind the books. Flannery O'Connor and Dorothy Parker tumbled to the floor so she could reach it. It proved to be another book, *The Collected Short Fiction of Guy de Maupassant,* bound in red buckram and read nearly to pieces. She pulled down the rest of the books and uncovered one other lurking in darkness: *The Metamorphosis and Other Stories,* its pages falling out.

The fat woman across the street invited her for tea, and she went gratefully. "Do you know, except for the people I work with, I don't know a soul in Florida?"

"Better off not knowing most of them," the fat woman said, and launched with gusto into an account of the misdeeds of her neighbors: women who had peculiar friends, were criminally careless with money, and failed to cut their grass.

Ms. McKane blushed. Her overgrown yard was still untouched. "I meant to do something about it this afternoon," she lied, "but I can't get the old mower to start. I suppose I'll have to buy a new one."

"Jane kept her place nice. I'll say that for her."

"She seems to have been an excellent citizen," Ms. McKane admitted dutifully.

"Except she never... you know. I've had it done three times. Raised them all, but Pearl IV's dead now."

Three copies of this? It was appalling.

"Her boat got flipped over. They never found the body."

Go to the old gray widow-maker, Ms. McKane thought. It wasn't right—why wasn't there a word for a mother whose child was dead? There should be. Aloud she said, "Was that what happened to the woman who owned my house? I was told she drowned."

The fat woman muttered something that sounded like *her sisters got her.*

"Beg pardon?"

"I said the cistern got her. Fell down it head first."

At home again, the lie became a truth: the mower would not start. Arm aching, Ms. McKane retreated to the coolness of the kitchen. That square of planks in the backyard surely marked the sinister spot. Just a concrete tank to catch rainwater from the roof for the garden, but she was not sure she would ever be able to lift the cover now. Who had found her? How long had it been? She wondered, yet preferred not to know.

There was someone—something—in the house. It moved things, if ever so little, while she was at the Cape. A box of dried fruit, which she had never touched after opening, emptied itself day by day. On windy nights something walked.

She invited everyone she knew even slightly to the housewarming and spent nearly three hundred dollars on food and liquor. It was a thundering success that left a physicist and two programmers passed out on her furniture, and it quieted "the ghost" for nearly two weeks.

Then it was back. She woke to hear it going down the stairs, and with more courage than she had known she possessed she went looking for it with a flashlight. "Who are you? I won't hurt you." *If you don't hurt me.* Only later did she wonder what she would have done if she had found someone—she forced herself to visualize a black girl—filling a sack.

The next day she went to a sporting-goods store. Firearms repelled her, but she said some animal, perhaps a raccoon, was getting into her garbage. When she admitted she had never fired a gun, the woman in the store suggested a trap instead, and she went away thinking about it.

What would be irresistible? Candy? She bought a box, counted the pieces, ate five, and left the box on the coffee table. Twenty-six. Twenty-six. *Twenty-four.* Twenty-four. Twenty-four. *Twenty-three.* That was a week, a work week, and a week seemed enough. She stopped counting and ate the rest of the candy herself, then bought a new box which she laced with rat poison. It remained untouched. She bought cookies, bread, jam, crackers, more dried fruit, fresh Indian River oranges, eggs, and canned oysters from Japan. In Boston she had had to struggle against chubbiness; now she was becoming gaunt. One night she dreamed that someone she could not see stood beside her bed voicing a complaint she could not hear, and the next day she brought home more food, delicacies chosen wildly.

An advertisement in *Scientific American* offered ornithologists an "electronic shotgun" capable of stunning birds as large as barn owls. She ordered one, giving her address at the Cape.

She put a bolt on her bedroom door, bought a hot plate, and had a telephone installed beside her bed. When a new woman reported to the department, Ms. McKane offered to share the house rent free; but the new woman was attractive and had, it seemed, better offers.

One night she saw an eerie light in the street and went out onto the porch. A little girl had imprisoned fireflies in a jar and was touring the neighborhood with them. Ms. McKane watched her until she realized that women all up and down the street were doing likewise.

She dreamed that she was Jane, head-down in the cistern. One of the programmers mentioned, half laughing, that someone had "had fun" with her as she slept on the Queen Anne sofa. "Was it you, Daisy?"

"Who remembers?" Ms. McKane said. "I suppose it might have been." They both laughed, and later that week the programmer asked

her to lunch, only to make it clear as they ate that she expected her to pick up the check. Ms. McKane thought, "How is this better?" and resolved never to speak to the programmer again. "You make more than I do," the programmer said as they left the cafeteria.

The electronic shotgun came, and she concealed it in her car. That evening, after pretending to leave the house, she returned through the rear door and searched everywhere, finding no one.

One morning she woke early without knowing why. As she lay in bed savoring the bygone luxury of sleep, she heard him descending the stairs. The sound was so devoid of stealth that as soon as it died away she felt sure it had been a waking dream, a phantom of hearing. She got up, put on her robe, and went downstairs to start coffee.

He was in the kitchen eating toast with strawberry preserves. His face seemed heavily brutal to her, masked though it was with curling black hair. "It's you," she said before she had time to wonder if it would not have been to her advantage to appear surprised and outraged.

He nodded, watching her with unblinking eyes.

"You must have known I would find you here."

He nodded again.

"I'm going to call the police." Quite suddenly it came to her that she should not have told him, that he might seize her (she felt sure he would be stronger than she) and carry her outside. In imagination she could see him kicking aside the cistern cover; she could see the circular opening to death. "I'll scream," she said.

"I won't touch you." His voice was deeper than she had anticipated, harsh and flat with isolation.

"I'm going to call the police," she said again. "You'd better go now. I won't try to stop you."

He spooned jam onto the second fragrant slice.

"They'll kill you."

He shook his head. "Not for a long time. First they'll ask me who helped me, how I stayed alive so long. I'll give your name."

"They won't believe you." Courage came welling up in her, welcome as forgotten money. "I am a doctor of science, a model citizen."

"I'm here. I'm my own evidence. Do you think they'll believe I could have lived with you all this time without your help?" He waved, and the gesture told of the large house and the well-stocked pantry shelves.

"You're clever, aren't you?" she said. He answered almost humbly, "I have nothing to do but read and plan."

As if by enchantment, the coffeepot was in her hand. She filled it at the sink and ladled in the coarse grains. "We may as well talk. I won't hurt you if you won't hurt me."

"I won't."

"That's right, you can't." Bitterly she added, "Who'd bring food for you?" and then recalled Jane dead in the cistern and the laden shelves. He had only to wait until his next victim came. She saw him as a black and hairy spider, patient at the center of his web.

"I won't," he said again. "And as for your trying to hurt me, it's the only thing you could do that would stop me from being afraid of you."

"Why did you show yourself to me? Don't tell me you wouldn't be afraid if the police came after you."

"Because it was too dangerous not to," the man said. "I worried, every day, that you would ask them to search. They might have found me."

Ms. McKane pulled out a chair and sat down, surprising herself and, she thought, him. "Where were you?"

"In various corners at various times."

"You killed the other woman—the one before me."

He nodded. "Indirectly and unintentionally, yes."

She was not sure what he meant. "Will you kill me the same way?"

"No."

"There must be a good many of you—more than most of us

think. I suppose that's why the government fusses about you so. Do you ever get together?"

"By twos and threes at night."

"And do all of you live the way you do? In houses, like this?"

He shook his head. The coffee was perking on the stove, filling the kitchen with its warm perfume.

"Perhaps we can strike some bargain. I get what I want and you get what you do." She felt desperate. "All right? What I want is for you to leave and promise you won't tell lies about me."

"Or the truth," he said. "That you sat down and talked to me instead of screaming or running for the telephone."

"Or the truth," Ms. McKane admitted. "Now what is it you want?"

"To remain here as long as I wish. To be safe until I can reach some country where men still rule."

She tried to smile. "It seems we've come to an impasse."

Suddenly he smiled, too. "Only in logic. From the books you brought, you're a mathematician..."

She nodded.

"But the sphere of logic has never been the world of women and men. If we can manage to forget it, we can both be free, or at least as nearly free as we are capable of being."

She got up and poured the coffee, waiting for him to continue. When he did not, she said, "I'm afraid I'm not the White Queen. I can't believe in impossible things."

"'I daresay you haven't had much practice,'" he quoted. "'Why, sometimes I've believed as many as six impossible things before breakfast.'" Then, "I didn't think you women still read male authors."

"I don't think we mathematicians will ever give up Carroll. Fortunately, we can mention the name without much danger. Do you know anything about math?"

He shook his head. "Only what I know about logic—that it should serve us and not master us. Don't you agree, for example, that

if we both wanted the same thing, we could not both have it? Look, here's a slice of bread, all nicely smeared with strawberry. We could divide it between us evenly, or by some complicated formula you would work out. But if we both wanted the whole slice, could we both have it? Both eat it?"

"What are you getting at?"

"Only that because we want quite different things, there's really no reason why each of us shouldn't pick up what each wants and walk away. I won't stop you if you don't try to stop me."

"You're not making sense."

He nodded seriously, "If I were to make sense, we'd both go to prison. Let me say it again: take what you want, and I'll take what I want. Say to yourself that I am gone, and I am gone. You'll never see me again, never hear me."

"But you'll really be here. I'll be living a lie."

"No, you won't; I'll go. I'll go when I think it's safe, and when I have found a place to go to; and if I should have to come back, I'll leave again. You may lock the house as tightly as you like; I'll find my way in if I have to. But don't search for me, or have people in. Will you agree?"

"No." She hesitated. "Yes. Perhaps. I have to think."

"I'll get you some more coffee," he said, then smiled almost apologetically. "The men in books are always doing things like that, and I'd like to."

She said, "I think you're mistaken. In the old days women waited on tables." But she herself was not paying attention to what she said. For a moment he stood beside her, the coffeepot she had bought on the first day at the end of his outstretched arm. Then he was gone. She waited for him to sit down again, but soon realized she was alone in the room, perhaps alone in the house.

Perhaps not. Each night she searched her bedroom (she had not agreed not to search her bedroom, only the house) and when she was sure it was empty, bolted the door. Each morning she found herself

thinking, as she entered the kitchen, of what she would say if she found him there.

The long, humid summer ended. Her television spoke of snow on the Great Plains, then showed it, white as innocence, swirling down the canyons of New York. The Florida air was cool and lively. Ms. McKane shut off the air conditioning and threw open windows.

Her work became more and more engrossing as the *Aphrodite* neared completion. Every conceivable and inconceivable contingency had to be reduced to equations that the programmers could translate for the computers. They, and the engineers, suggested hypothetical corrective actions, which in turn had to be reduced to mathematical form. Observation stations were planned for California and the northern slope of Alaska; ships would sail to keep the orbiting segment under observation when it swooped below the Southern Cross. Already the second-segment launch vehicle was rising amid a hodgepodge of cranes and scaffolding. Plans for the third were rolling from the graphic display terminals, plans for the fourth beginning to take shape. Woman would come to stay where Man had merely journeyed to adventure.

At times she was painfully conscious that the symbols she blithely manipulated were in fact hundreds of tons of metal and fuel. At other times it seemed to her that no plan could anticipate the actuality of the launch, that *Aphrodite* would bore downward into the earth when the rockets were kindled, or would float away like thistledown. She seldom left the Cape before dark now, and when she returned home it was only to shower and drop her still damp body upon her bed.

One night when she returned even later than usual, there came a single soft sound like the hesitant footfall of some kindly one-legged beast. Her toe touched an unknown something on the floor as she stepped into the bedroom to turn on the light. It was a book: *Sylvie and Bruno.*

Thereafter she received gifts more or less weekly. Some were books (among them, *Pillow Problems*). More often there were flowers,

old-fashioned jewelry, and mere odds and ends: lovely shells, a large coconut, a gold-plated pen. Once a fresh red snapper laid on crushed ice in a china bowl that was not hers.

In various ways she tried to signal that all these tributes were unwelcome and, because they were dangerous, worse than useless. Yet she could not bring herself to waste or destroy them. She cleaned, cooked, and ate the fish, hid the books behind the books in the living room, and one day found herself scribbling an integral with the pen. Sometimes she stayed all night at the Cape, catching a nap after midnight on the couch in the rest room; this impressed her superiors as extraordinary devotion to the project.

As she turned into the street she saw the police cars, three of them. An instant later came the throbbing of a helicopter; searchlights stabbed and darted from above. As calmly as she could, she guided the car into the driveway and got out. Two cops—tall, muscular women holding riot guns—were coming toward her. Knowing it would be demanded, she opened her purse for her identification, and the guns were leveled at her.

She seemed to be standing outside herself, watching a stranger wax quietly hysterical. No, this new Ms. McKane said. No, she had seen nothing, had heard no gossip, no rumors. Yes, she lived alone. Yes, they could go through her house if they wished.

"We'd better, for your own protection," one of the cops told her. "He could have broken in while you were away. You wouldn't want to go inside and have him jump you."

"No," Ms. McKane agreed. She unlocked the front door and switched on the lights, wondering what she would say if there were a book or a fish in the hall upstairs. There was nothing. She allowed them to probe beneath her bed with their flashlights, then led them up the folding stair to the third floor, and down to the laundry room and the hulking air conditioner.

When they left, she packed a bag. Her initials were on it, so she tried to compose a new name to match them. She could never return

to Boston; they would surely find her there. Denver McKay, Detroit McKenzie... The telephone rang.

"Hello, Dr. McKane?" She did not recognize the voice.

"Yes?"

"I hope I didn't get you out of bed. This is Edith Berg, the head of the Mathematics Division. I think we've met once or twice."

"Oh, no, Dr. Berg." Ms. McKane glanced at her open suitcase. "I was just putting some things away."

"Good. I wouldn't call you like this if it weren't an emergency. Do you know Char Cavallo? She's had a heart attack."

"I don't know her well," Ms. McKane said, frantically searching her memory for something that would link Dr. Cavallo to herself. "But of course I'm sorry to hear it."

"Congestive heart failure—that's what they say. She was to be the chief mathematician on the *Frances Alda,* and now of course she can't possibly go. Someone has to, and most of the women who've been with the project longer can't be spared or have sailed already on the test shots. I wondered—I should say I hoped..."

"I'll go," Ms. McKane said.

Dr. Berg's voice brightened. "Really? That's wonderful!"

"I'd like to," Ms. McKane told her. "I would."

"This won't be a pleasure cruise, you understand. Living conditions aboard the ships are primitive, and there won't be many people to talk to. You'll be at sea for several months."

"I'll take some books."

"Dr. McKane, you're a tower of strength. I won't forget this. Can you report to the ship in the morning? Before seven? They have to go then—something about the tide."

"I'd rather report tonight," Ms. McKane said. "I'd like a chance to get used to my cabin before we put out. Get unpacked and so on."

"Fine. I'll let them know you're coming. Thanks again, and good-bye. You don't know how much I appreciate this."

When Ms. McKane had snapped closed her suitcase she went to the head of the stair. *"Listen to me!"* Her voice echoed through the

house. "I'm sorry about the search. They would have arrested me and searched anyway, if I had said no. Now I'm going away. It's my right, under our agreement, to act as if you're not here." She waited, listening. There was no sound, no reply. Doubtless he had fled before the police came. "It's my right," she said again. "They need me to observe the shot." Unable to help herself she added, "I appreciated the gifts. Thank you, and good luck."

The hooting of the tugs woke her next morning. For a quarter of an hour she remained in her bunk rejoicing in the rocking motion that seemed to soothe while it stimulated her. *Cradle of the Deep*—she had read it in freshman English—by Joan Somebody. There was a flash of white as a gull zoomed past the porthole, and the air in the cabin was sea air.

Ms. McKane got up, washed, dressed in old college clothes, and went on deck. Florida had already dwindled to a low coast aft. The Atlantic was sullen, powerful, and beautiful under the bright sun, an unending tiger seen through an emerald. Forward, two pigtailed sailors were casting off the last tow. As though under invisible hands, the rigging grew taut. Motors hummed and winches turned, and transparent Mylar sails, looking like the cast skins of snakes, climbed the steel masts. Ms. McKane looked toward the bridge, hoping to see the captain busy at her controls, but there was only the glare of the morning sun on the glass. With a snapping like a whip's, one snakeskin became the side of an immense soap bubble, followed by another and another. The masts turned to catch the wind, and the *Frances Alda* heeled and came to life.

She stayed on deck until breakfast. In what was called the salon she gulped coffee and scrambled eggs, and explained her last-minute substitution for Dr. Cavallo. As soon as she could, she went topside again. Freedom seemed tangible there, something she could feel seeping into her lungs and racing through her arteries. "I have been soiled all my life," she thought. "This is making me clean." By noon she realized she had the beginnings of a sunburn and

went below, congratulating herself on her foresight in bringing lotion.

In the darkness below deck she glimpsed the stowaway's bearded face.

The Rubber Bend

It was a dark and stormy night—not actually night but late afternoon, and raining buckets. I share an apartment with March B. Street, the human consulting engineer-detective, and I recall that when I came home that afternoon, Street ventured some deduction to the effect that it must be raining, since the water was still streaming off me and onto the carpet, and I remarked that it was a nice day out for ducks, a little witticism I have often found to have a remarkably calming effect on my patients, though of course—I am a bio-mechanic, you see—its use is somewhat dependent on the weather; though I am over fifty, my seals are still tight and I think I may boast that you won't find another robot my age with fewer rain leaks anywhere.

Where was I? Oh, yes. It was on a dark and stormy afternoon in October that I was first introduced to the weird and sinister business which I, in these reports, have chosen to refer to as *The Affair of the Rubber Bend.*

Street waited until I had dried myself off and was about to sit down with the paper, and then said sharply, "Westing!"

I confess I was so startled that for an instant I froze in a sort of half-crouch with my hips perhaps four inches above the seat of the scuffed old Morris chair next to Street's antique telespectroscope; had I known at the time how significant that posture was to be, in the eldritch light of the disappearance of Prof. Louis Dodson and the haunting of—but perhaps I am in danger of anticipating my story.

"Westing," Street continued, "for goodness' sake sit down. Hanging in the air like that, you look like a set of tin monkey bars flunking Darwin."

"It's only natural," I said, taking my seat, "for you humans to envy the somewhat greater coordination and superior muscular effectiveness we possess, but it is hardly necessary—"

"Quite. I'm sorry I startled you. But I had been thinking, and I want to talk to you. You are, are you not, a member of the Peircian Society?"

"Certainly," I said. "You know perfectly well, Street, that on the first Monday of each odd-numbered month I absent myself from this apartment—good lord, have I missed a meeting?" I had risen again and was actually trying to recall what I had done with my umbrella when I caught the error. "No, you're wrong for once, Street. This is October. October isn't—November is, of course, but today's Tuesday. Our meeting's five days off yet."

"Six," Street said dryly, "but I didn't say you were late for the meeting; I simply asked if you were still a member. You are. Am I not correct in saying that the purpose of the society is to discuss—"

In my eagerness I interrupted him. "To prove that the works signed 'Damon Knight' were actually written by the philosopher Charles Sanders Peirce, of course. And they were, Street. They were. It's so obvious: Peirce, the otherwise unknown founder of Logical Positivism—"

"Pragmatism," Street said.

"They are almost the same thing. Peirce, as I was saying, lived in Milford, Pennsylvania—a minute hamlet since buried under the damned waters of the Delaware—"

"You don't bury things under water."

"—thus conveniently destroying certain evidence the historical establishment did not want found. Note these points, Street: a village the size of Milford could hardly expect one such man in five hundred

years; it had—this is what we are supposed to believe—two in less than fifty. Knight—"

"Knight also lived in Milford?"

"Yes, of course. Knight appeared shortly after Peirce—supposedly—died. Peirce, at the time of his supposed death, was being sorely hounded by his creditors. Peirce grew a thick beard, obviously to keep from being recognized later as Knight. Knight also grew a beard to prevent his being recognized as Peirce. Can't you see, Street..." I paused.

"You pause," Street remarked. "Has something struck you?"

"Indeed it has. You, Street, have become engrossed in this most fascinating of historical, scientific, and literary puzzles. You will apply your immense abilities to it, and in a short time we will know the truth."

"No."

"No?"

"I only apply those abilities you have flatteringly called immense to puzzles which hold out some possibility of remuneration, Westing. I merely wished to know if you were still a member of the Peircian Society. You are, and I am content."

"But surely—"

"There is a favor I would like you to do for me—it may be rather an inconvenience for you."

"Anything, Street. You know that."

"Then I want you to live for a few days with a friend of mine—be his houseguest. It shouldn't interfere with your practice, and I'll set up a gadget to relay your calls."

"I could go to a hotel—"

"I'm not trying to get rid of you, Westing; it's your presence there I want—not your absence here."

"Street, does this have something to do with—"

"The Peircian Society? No, not at present; in fact, Westing, I wish you'd forget I ever mentioned that. Put it completely out of your mind. A friend of mine—his name is Noel Wide, by the way—wishes

to have a good bio-mechanic near at hand in the evenings. Ordinarily he calls a neighbor of his, but the fellow is on vacation at the moment. He asked if I could suggest someone, and I told him I'd try to persuade you to fill in. If you are willing to go, I want you there tonight."

"Tonight?"

"At once. Collect your medical bag and emergency self-maintenance kit and be on your way."

"Street, you're not telling me everything."

"I am telling you everything it's politic to tell you at the moment, and it's important that you don't miss dinner at Wide's. If you are sincere in wanting to go, go now. Here—while you've been jabbering I've written out the address for you."

"Dinner? Street, you know it isn't necessary—we robots don't—"

Something in his look stopped me. I collected the accouterments he had suggested and took my departure; but as I left I noted that Street, now calm again, had picked up the book that lay beside his chair, and as I read the title an indescribable thrill shot through me. It was *A for Anything.*

The address to which Street had dispatched me proved to be an old brownstone in a neighborhood that held a thousand others. It had once had, I observed as I plodded toward it through the downpour, a sort of greenhouse or conservatory on its roof, but this was now broken and neglected, and its shattered panes and rusted ironwork, dripping rain, looked as dejected as I felt. At my knock the door, which was on a chain-guard, was opened by a robot younger (or as Street would say, "newer") than myself. I asked if he was Mr. Wide.

He grinned mechanically, and without offering to unchain the door, replied, "He lives here, but I'm Arch St. Louis—you want in?" I observed that he sported a good deal of chrome-and-copper trim, arranged in a manner that led me to think better of his bank account than of his taste. In answer to his question I said, "Please," and when

he continued immobile I added, "As you see, I'm standing in the wet—I'm Dr. Westing."

"Why didn't you say so?"

In a moment he had opened the door and shown me in. "Here," he said, "I'll get you some red-rags to wipe yourself off with. Don't take the cold reception to heart, Doc; we have unpleasant company from time to time."

I stifled the impulse to remark that birds of a feather assemble in groups, and asked instead if it would be possible for me to see Mr. Wide, my host.

St. Louis glanced at his watch. "Five minutes, he's down in the plant rooms. He'll be up at six."

"The plant rooms?"

"In the basement. He grows mushrooms. Come on into the office."

I followed him down a short corridor and entered a large and beautifully appointed chamber fitted out as something between an office and a parlor. A small desk near the door I deduced to be his; at the other side of the room stood a much larger desk with a scattering of unopened correspondence on its top, and behind it an immense chair. I walked over to examine the chair, but my awed perusal of its capacious dimensions was interrupted by the labored sighing of an elevator; I turned in time to see a pair of cleverly disguised doors slide back, revealing the most bulky robot I have ever beheld. He was carrying a small basket of tastefully arranged fungi, and holding this with both hands so as (at least, so it seemed to me) to have an excuse to avoid shaking hands with me, he marched across the room to the larger desk, and seating himself in that gargantuan chair, placed the basket squarely before him.

"Mr. Wide," St. Louis said, "this is Doc Westing."

"A pleasure, Doctor," Wide said in a thick but impressive voice. "You have come, I hope, to stay until my own physician returns?"

"I'm afraid there has been a mistake," I told him. "I am a bio-mechanic, with no experience in robot repair. My patients—"

"Are human. Indubitably, Doctor. It is not for me, nor for Mr. St. Louis, that your services may be required. I frequently entertain human guests at my table."

"I see," I said. I was about to ask why his guests should require the services of a bio-mechanic when St. Louis caught my eye. His eloquent look told me more plainly than words could that I would be wise to hold my peace until he explained later.

"You are clearly fatigued, Doctor," Wide was saying. "Perhaps you will permit my associate to show you to your room, and afterward give you a tour of the house."

I admitted I could do with some freshening up.

"Then I will expect you for dinner."

As the sliding doors of the elevator closed behind us, St. Louis grinned and gestured toward the control panel. "See those, Doc? Push one. Your room's on three."

I pressed the button marked *3*. The elevator remained immobile.

"They're phonies; leave it to Arch."

Addressing no visible person he said loudly, "Take 'er down, Fritz. Plant rooms." The elevator began a gentle descent.

"I'm afraid," I began, "that I don't—"

"Like I said, the buttons are phonies. Sometimes the cops want to bother Mr. Wide when he's down in the plant rooms or up in the sack thinking great thoughts. So I herd 'em in here, press the button, they see it don't work, and I take off that access plate there and start playing around with the wires. They're dummies too, and it works good on dummy cops. Like it?"

I said I supposed such a thing must often be useful, which seemed to please him; he treated me to his characteristic grin and confided, "We call it the St. Louis con, or sometimes the old elevator con. The real deal is the house has a built-in cyberpersonality, with speakers and scanners all over. Just ask for what you want."

"I thought," I ventured as the elevator came to a halt, "—I mean, weren't we going up to my room?"

"I'm showing you the mushrooms first," St. Louis explained,

"then you'll have a clear shot upstairs until dinner, and I'll have a chance to do some chores. Come on, they're worth seeing."

We stepped out into semidarkness; the ceiling was low, the room cool and damp and full of the smell of musty life. Dimly I could make out row upon row of greenhouse benches filled with earth; strange, uncouth shapes lifted blind heads from this soil, and some appeared to glow with an uncanny phosphorescence. "The mushrooms," St. Louis said proudly. "He's got over eighteen hundred different kinds, and believe me, he gets 'em from all over. The culture medium is shredded paper pulp mixed with sawdust and horse manure."

"*Amazing,*" I said.

"That's why he wants you here," St. Louis continued. "Wide's not only the greatest detective in our Galaxy, he's also the greatest gourmet cook—on the theoretical end, I mean. Fritz does the actual dirty work."

"Did you say Mr. Wide was a detective?"

"I may have let it slip. He's pretty famous."

"What a striking coincidence. Would you believe it, St. Louis, my own best friend—"

"Small Universe, isn't it? Does Street cook too?"

"Oh," I said, "I didn't know you knew him; no, Street's hobby is collecting old machines, and scientific tinkering generally."

"Sometimes I wish Wide's was, but he cooks instead. You know why I think he does it?"

"Since no one but a human being can eat the food, I can't imagine."

"It's those add-on units—you noticed how big he was?"

"I certainly did! You don't mean to say—"

St. Louis nodded. "The heck I don't. Add-on core memory sections. His design is plug-to-plug compatible with them, and so far he's sporting fourteen; they cost ten grand apiece, but every time we rake in a big fee he goes out and buys his brains a subdivision."

"Why, that's incredible! St. Louis, he must be one of the most intelligent people in the world."

"Yeah, he's smart. He's so smart if he drops something on the floor I got to pick it up for him. But it's the image, you know. He's eighty inches around the waist, so he figures he's got to do the food business. You ever hear of *Truffles et Champignons à la Noel Wide*? He makes it with sour cream and sauerkraut, and the last time he served it we almost lost two clients and an assistant district attorney."

"And he's giving one of these dinners tonight? I'm surprised that anyone would come."

St. Louis shrugged. "He invites people who owe him a favor and don't know; and then there's a bunch who'll turn up darn near regularly—some of the stuff's pretty good, and it's a sort of suicide club."

"I see," I said, rapidly checking over the contents of my medical bag mentally. "Am I correct in assuming that since, as you say, there is a great deal of cooking done in this house, you are well supplied with baking soda and powdered mustard?"

"If it's got to do with food, we've got tons of it."

"Then there's nothing to worry—"

I was interrupted by the sound of the elevator doors, and Wide's deep, glutinous voice: "Ah, Doctor, you have anticipated me—I wished to show you my treasures myself."

"Mr. St. Louis tells me," I said, "that you have mushrooms from all over the universe, as well as the Manhattan area."

"I do indeed. Fungi from points exotic as Arcturus and as homely as Yuggoth. But I fear that—great as my satisfaction would be—it was not to expatiate upon the wonders of my collection that I came." He paused and looked out over the rows of earth-filled benches. "It is not the orchid, but the mushroom which symbolizes our society. I used to grow orchids—were you aware of that, Doctor?"

I shook my head.

"For many years. Then I acquired my eighth unit of additional core." Wide thoughtfully slapped his midsection—a sound deeply reverberant, but muted as the note of some great bronze gong in a forgotten catacomb of the temple of Thought. "I had no sooner gotten that unit up, than the insight came to me: *No one can eat orchids.* It was as simple as that: *No one can eat orchids.* It had been staring me in the face for years, but I had not seen it."

St. Louis snorted. "You said you came down here for something else, boss."

"I did. The client is here. Fritz admitted her; she is waiting in the front room with a hundred thousand credits in small bills in her lap."

"Want me to get rid of her?"

"There has been another apparition."

St. Louis whistled, almost silently.

"I intend to talk to her; it occurred to me that you might wish to be present, though Dr. Westing need not trouble himself in the matter."

A sudden thought had struck me: If, as it had appeared to me earlier that evening, Street had had some ulterior motive in sending me to this strange house, it was quite probable that it had to do with whatever case currently engaged Wide's attention. I fenced for time. "Mr. Wide, did I hear you say 'apparition'?"

Wide's massive head nodded slowly. "Thirteen days ago the young woman's 'father', the eminent human scientist Louis C. Dodson, disappeared. Since that time an apparition in the form of Dodson has twice been observed in his old laboratory on the three thousand and thirteenth floor of the Groan Building. Miss Dodson has retained me to investigate Dodson's disappearance and lay the phantom. You appear disturbed."

"I am. Dodson was—well, if not a friend, at least a friendly acquaintance of mine."

"Ah." Wide looked at St. Louis significantly. "When was the last time you saw him, Doctor?"

"A little less than two months ago, at the regular meeting. We were fellow members of the Peircian Society."

"He appeared normal then?"

"Entirely. His stoop was, if anything, rather more pronounced than usual, indicating relaxation; and the unabated activity of the tics I had previously observed affecting his left eye and right cheek testified to the continuing functioning of the facial nerves."

I paused, then took the plunge. "Mr. Wide, would it be possible for me to sit in with you while you question his daughter? After all, death is primarily a medical matter, and I might be of some service."

"You mean, his 'daughter'," Wide said absently. "You must, however, permit me to precede you—our elevator is insufficiently capacious for three."

"He's hoping she'll object to you—that'll give him an excuse to threaten to drop the case," St. Louis said as soon as we were alone. "And that elevator'll hold five, if one of 'em's not him."

I was thinking of the death of my old acquaintance, and did not reply.

Alice Dodson, who sat on the edge of a big red leather chair in front of Wide's desk, was as beautiful a girl as I had ever seen: tall, poised, with a well-developed figure and a cascade of hair the color of white wine. "I assume," Wide was saying to her as St. Louis and I emerged from the elevator, "that that diminutive glassine envelope you hold contains the hundred thousand in small bills my cook mentioned."

"Yes," the girl said, holding it up. "They have been micro-miniaturized and are about three millimeters by seven."

Wide nodded. "Arch, put it in the safe and write her out a receipt. Don't list it as an addition to the retainer, just: 'Received of Miss Alice Dodson the sum of one hundred thousand credits, her property.' Date it and sign my name."

"I've already given you a retainer," Miss Dodson said, unsuccessfully attempting to prevent St. Louis's taking the envelope, "and I just stopped by here on my way to the bank."

"Confound it, madame, I conceded that you had given us a retainer, and I have no time for drollery. Tell us about the most recent apparition."

"Since my 'father' disappeared I have entered his laboratory at least once every day—you know, to dust and sort of tidy up."

"Pfui!" Wide said.

"What?"

"Ignore it, madame. Continue."

"I went in this morning, and there he was. It looked just like him—just exactly like him. He had one end of his mustache in his mouth the way he did sometimes, and was chewing on it."

"Dr. Westing," Wide said, turning to me, "you knew Dodson; what mood does that suggest? Concupiscent? (We must remember that he was looking at Miss Dodson.) Fearful?"

I reflected for a moment. "Reflective, I should say."

Miss Dodson continued: "That's all there was. I saw him. He saw me—I feel certain he saw me—and he started to rise (he was always such a gentleman) and"—she made an eloquent gesture—"puff! He disappeared."

"Extraordinary."

"Mr. Wide, I've been paying you for a week now, and you haven't gone to look at the ghost yet. I want you to go in person. Now. Tonight."

"Madame, under no circumstances will I undertake to leave my house on business."

"If you don't I'm going to fire you and hire a lawyer to sue for every dime I've paid you."

"However, it is only once in a lifetime that a man is privileged to part the curtain that veils the supernatural." Wide rose from his huge chair. "Arch, get the car. Doctor, my dinner for tonight must be postponed in any event; would you care to accompany us?"

During the drive to Dodson's laboratory I ventured to ask Miss Dodson, with whom I damply shared the rumble seat of Wide's Heron coupe, her age. "Eight," she replied, lowering her eyes demurely.

"Really? I had observed that your attire is somewhat juvenile, but I would have taken you for a much older girl."

"Professor Dodson liked for me to be as young as possible, and I always tried to make him happy—you know, for a robot you're kind of a cuddle-bear."

It struck me then that if Miss Dodson were, in fact, to take Wide off the case, I might recommend my friend Street to her; but since for the time being Wide was still engaged, I contented myself with putting an arm gently across her shoulders and slipping one of my professional cards into her purse.

"As you see, Doctor," Wide explained when we had reached the three thousand and twelfth floor, "Dodson both lived and worked in this building. This floor held his living quarters, and Miss Dodson's—they shared most facilities. The floor above is his laboratory, and to preserve his privacy, is inaccessible by elevator. As this is your home, Miss Dodson, perhaps you should lead the way."

We followed the girl up a small private escalator, and found ourselves in a single immense room occupying the entire three thousand and thirteenth floor of the building. Through broad windows we could see the upper surface of the storm raging several miles below; but this was hardly more than a background, however violent and somber, to the glittering array of instruments and machines before us. Between our position by the escalator and the large clock on the opposite wall three hundred feet away, every inch of floor space was crammed with scientific apparatus.

"I left the lights *off,*" Alice Dodson remarked in a shaken voice, "I know I did. You don't suppose that *he*—"

"There!" St. Louis exclaimed, and following the direction indicated by his outthrust finger, I saw a black-clad figure bent over a

sinister machine in the center of the laboratory. While St. Louis muttered something about never going out on a murder case without a gun again, I seized a heavy isobar from a rack near the door.

"You won't need that, Westing," a familiar voice assured me.

"Street! What in the world are you doing here?"

"Earning my pay as a consulting detective, I hope. I am here at the instigation of Mr. Noel Wide."

Miss Dodson, still apparently somewhat shaken, looked at Wide. "Is this true?"

"Certainly. Madame, because you found me at my desk when you called, you supposed me inactive; in point of fact I was, among other activities, awaiting Street's report."

"You were working the crossword in the *Times!* Your house told me."

"Confound it! I said among other activities."

"Here, now," Street intervened. "Quarreling lays no spooks. From the fact that you are here, Wide, I assume there has been some recent development."

"There has been another apparition. Miss Dodson will tell you."

"Since my 'father' disappeared," Miss Dodson began, "I have entered his laboratory at least once every day—you know, to dust and sort of tidy up."

"Pfui!" Wide interjected.

Seeing that both Street and Wide were giving Miss Dodson their complete attention, I took the opportunity to speak to Wide's assistant. "St. Louis," I asked, "why does he make that peculiar noise?"

"Every once in a while he gets too disgusted for verbal, and wants to write out a comment on his printer—"

"Why? Interior printers are fine for notes, but I've never heard of using them to supplement conversation."

"Oh, yeah? Did you ever try to *say:* *#@&!°!!?"

"I see your point."

"Anyway, he doesn't like women mucking around a house, but

his printer don't work; he got clarified butter in it one time when he was trying to make *Currie Con Carne mit Pilz à la Noel Wide*, so when he tries to feed out the paper he makes that noise."

"You say," Street was asking Miss Dodson, "that when you saw him he was *sitting*? Where?"

"Right there," she said, indicating a low casual chair not far from us.

"But, as I understand, in both the earlier apparitions he was *lying down*?"

The girl nodded voicelessly.

"May I ask precisely where?"

"The f-first time—pardon me—the first time over on a day bed he kept over there to rest on. The s-second—"

"Please try and control yourself. Dr. Westing can administer medication if you require it."

"The second time, he was on a chaise longue he had put in for me near his favorite workbench. So I could talk to him there."

"And his behavior on these two occasions?"

"Well, the first time I had been so worried, and I saw him lying there on the bed the way he used to, and without thinking I just called out, 'Snookums!'—that's what I always used to call him."

"And his behavior? Give me as much detail as possible."

"He seemed to hear me, and started to get up...."

"And disappeared?"

"Yes, it was terrible. The second time, when he was on the chaise, I was carrying some dirty beakers and Erlenmeyer flasks over to the sink to wash. When I saw him there I dropped them, and as soon as I did he disappeared."

Street nodded. "Very suggestive. I think at this point we had better examine the day bed, the chaise longue, and that chair. Tell me, Miss Dodson, of the five of us, which is closest in height to the professor?"

"Why...." She hesitated for a moment. "Why, Dr. Westing, I suppose."

"Excellent," said Street. We all trooped after him as he crossed the huge laboratory to the day bed Alice Dodson had indicated. "Westing," Street murmured, "if you will oblige me."

"But what is it you wish me to do?"

"I want you to lie down on that bed. On his back, Miss Dodson?"

"More on his side, I think."

"And try," St. Louis put in, "to look like a genius, Doc." Wide shushed him.

"Don't hesitate to arrange his limbs, Miss Dodson," Street told her; "this is important. There, is that satisfactory?"

The girl nodded.

Street whipped a tape rule from his pocket and made a series of quick measurements of my position, jotting down the results on a notepad. "And now, Miss Dodson, please give me the date and time when you saw the professor here—as exactly as possible."

"October twelfth. It was about ten-twenty."

"Excellent. And now the chaise."

At the chaise longue we repeated the same procedure, Miss Dodson giving the date and time as October eighteenth, at ten minutes to eleven.

When I had been measured in the chair as well, Street said, "And today is October twenty-fifth. At what time did you see the professor?"

"It was about one o'clock this afternoon."

While Street scribbled calculations on his pad, Wide cleared his throat. "I notice, Street, that the time of this most recent apparition would seem to violate what might earlier have appeared to be an invariable rule; that is, that Dodson's ghost appeared at or very nearly at ten-thirty in the morning."

Street nodded. "If my theory is correct, we shall see that those significant-looking times were mere coincidences, arising from the fact that it was at about that time each day that Miss Dodson entered this room. You did say, did you not, Miss Dodson, that you came *every day*?"

The girl shook her head. "I suppose I did, but actually the first apparition frightened me so much that I didn't come again until—"

"Until the eighteenth, when you saw him the second time. I suspected as much."

"Street," I exclaimed, "you understand this dreadful business. For heaven's sake tell us what has been happening."

"I shall expound my theory in a moment," Street replied, "but first I intend to attempt an experiment which, should it succeed, will confirm it and perhaps provide us with valuable information as well. Miss Dodson, your 'father'—like myself—dabbled in every sort of science, did he not?"

"Yes, at least... I think so."

"Then is there such a thing as a wind tunnel in this laboratory? Or any sort of a large, powerful fan?"

"He—he was interested in the techniques air-conditioning engineers use to make their systems as noisy as possible, Mr. Street. I think he had a big fan for that."

After a ten-minute search we found it, a powerful industrial-grade centrifugal fan. "Exactly what we need," Street enthused. "St. Louis, you and Westing take the other side of this thing. We want to set it up on the lab bench nearest the escalator."

When we had positioned it there, Street turned to the girl and said, "Miss Dodson, at this point I require your fullest cooperation—the success of this experiment depends primarily upon yourself. I have placed the fan where you see it, and I intend to spike the base to the top of the bench and permanently wire the motor to make it as difficult as possible for anyone to disconnect. I want your solemn word that you will not disconnect it, or interfere with its operation in any way; and that you will exert your utmost effort to prevent any other person whatsoever from doing so before November seventh."

"You think," the girl said in so low a tone that I could scarcely make out the words, "that he is still alive, don't you?"

"I do."

"If this fan runs all that time, will it bring him back to us?"

"It may help."

"Then I promise."

"Even should the professor be restored to you, it must remain in operation—do you understand? It might be wise, for example, to persuade him to take a brief holiday, leaving the fan untouched."

"I will do my best," the girl said. "He likes the seaside."

Street nodded, and without another word walked to the wall, threw one of the main circuit breakers, and began soldering the fan-motor leads into a 220-volt utility circuit. Under Wide's direction St. Louis and I found hammers and a gross of heavy nails, with which we secured the base to the benchtop.

"Now," Street announced when all our tasks were complete, "once again I shall require cooperation—this time from every one of you. I shall stand here at the circuit breaker. The rest of you must scatter yourselves over this entire laboratory, each taking a section of it as his own responsibility. When I turn on the fan, things will begin to blow about. What we are looking for will, I think, be a slip of notebook paper, and when you observe it, it will be at a distance of about seventy-six centimeters from the floor. Seize it at once—if you wait for it to settle we are lost."

We did as he asked, and no sooner was the last of us in position than the huge fan sprang into life with hurricane force. A tremendous wind seemed to sweep the entire laboratory, and several pieces of light glassware went over with a crash.

Keeping my eyes fixed, as Street had suggested, at a height of seventy-six centimeters above the floor, I at once observed a sheet of paper fluttering in the machine-made wind. I have often observed that a scrap of paper, blown about, will seem to appear when its surface faces me and disappear when it is edge-on, and for an instant I assumed that the peculiar character of this one stemmed from a similar cause; then I realized that this was not the case—the sheet was, in fact, *actually disappearing and reappearing* as it danced in the gale. Street and I both dived for it at once. He was a shade quicker;

for a split second I saw the tips of his fingers vanish as though amputated by some demonic knife; then he was waving the paper overhead in triumph.

"Street!" I exclaimed, "you've got it! What is it?"

"There's no need to shout, Westing. If you'll step back here behind the inlet we can talk quite comfortably. I was relying upon a brilliant scientist's habitual need to reduce his thoughts to paper, and it has not failed me."

"What is it?" I asked, "Can I see it?"

"Certainly," Street said, handing me the paper. Miss Dodson, Wide, and St. Louis crowded around.

The note read:

160 cm—4:00
159.5—2:00
159.0—12:00

$d = 14{,}400 \text{ sec/cm} \times h$

"Brief," Street remarked, "but eminently satisfying. The great scientist's calculations agree astonishingly well with my own."

"But, Street," I protested, "it doesn't tell us anything. It's only a formula."

"Precisely the way I have always felt about those prescriptions of yours, Westing."

Wide said, "I think it's time you reported, Street."

"It will take only a few moments now for me to begin the rescue of Professor Dodson," Street told him. "And then we will have some minutes in which to talk. Have you ever practiced yoga, Mr. Wide? No? A pity."

Before our astonished eyes Street proceeded to stand on his head, assuming the posture I believe is known as "The Pole." We heard him say in a distinct voice, "When you grow tired of this, Professor, you have only to use the escalator. Use the escalator." Then with

the agility of an acrobat he was upright again, slightly red of face.

"I believe, sir," Wide said, "that you owe us an explanation."

"And you shall have it. It occurred to me today, while I sat in the lodgings I share with Dr. Westing, that Professor Dodson's disappearance might be in some way connected with his membership in the Peircian Society. That he was a member was stated in the dossier you passed on to me, Wide, as you may recall."

Wide nodded.

"I began my investigation, as Dr. Westing can testify, by rereading the complete works of Peirce and Knight, keeping in mind that as a Peircian Dodson ardently believed that the persecuted philosopher had arranged his own supposed death and reappeared under the *nom de guerre* of Knight; certainly, as the Peircians point out, a suitable one—and particularly so when one keeps in mind that a knight's chief reliance was upon that *piercing* weapon the lance, and that Knight was what is called a *freelance.*

"I also, I may say, kept before me the probability that as both a Peircian and as a man of high intellectual attainments Dodson would be intimately familiar with what is known of the life and work of both men."

"Do you mean to say," I exclaimed, "that your reading led you to the solution of this remarkable case?"

"It pointed the way," Street acceded calmly. "Tell me, Westing, Wide, any of you, what was Charles Sanders Peirce's profession?"

"Why, Street, you mentioned it yourself a moment ago. He was a philosopher."

"I hope not. No, poor as that shamefully treated scholar was, I would not wish him in so unremunerated a trade as that. No, gentlemen—and Miss Dodson—when his contemporaries put the question to Peirce himself, or to his colleagues, the answer they received was that Peirce was a physicist. And in one of Knight's books, in an introduction to a piece by another writer, I found this remarkable statement: *It deals with one*

of the most puzzling questions in relativity, one to which Einstein never gave an unequivocal answer: If all four space-time dimensions are equivalent, how is it that we perceive one so differently from the rest? That question is sufficiently intriguing by itself—conceive of the fascination it must have held for Dodson, believing, as he did, that it had originated in the mind of Peirce."

"I begin to see what you are hinting at, Street," Wide said slowly, "but not why it affected Dodson more because he thought Peirce the author."

"Because," Street answered, "Peirce—Peirce the physicist—was the father of pragmatism, the philosophy which specifically eschews whatever cannot be put into practice."

"I see," said Wide.

"Well, I don't," announced St. Louis loudly. He looked at Miss Dodson. "Do you, kid?"

"No," she said, "and I don't see how this is going to help Sn—the professor."

"Unless I am mistaken," Street told her, "and I hope I am not, he no longer requires our help—but we can wait a few moments longer to be sure. Your 'father', Miss Dodson, decided to put Knight's remark to a practical test. When you entered the room this evening, I was in the act of examining the device he built to do it, and had just concluded that that was its nature. Whether he bravely but foolhardily volunteered himself as his own first subject, or whether—as I confess I think more likely—he accidentally exposed his own person to its action, we may never learn; but however it came about, we know what occurred."

"Are you trying to say," I asked, "that Dodson discovered some form of time travel?"

"We all travel in time, Westing," Street said gravely. "What Professor Dodson did—he had discovered, I may add parenthetically, that the basis for the discrimination to which Knight objected was physiological—was to bend his own perception of the

four dimensions so that he apprehended verticality as we do duration, and duration as we do verticality."

"But that formula," I began, "and the note itself—"

"Once I understood Dodson's plight," Street explained, "the question was quantitative: How was vertical distance—as seen by ourselves—related to duration as perceived by Dodson? Fortunately Miss Dodson's testimony provided the clue. You will remember that on the twelfth she had seen Dodson lying on a day bed, this being at approximately ten-thirty in the morning. On the eighteenth, six days later but at about the same time, she saw him on her chaise longue. A moment ago I measured your position, with you posed as the missing man had appeared, but I still did not know what portion of the body governed the temporal displacement. The third apparition, however, resolved that uncertainty. It took place seven days and two hours and ten minutes after the second. Dodson's feet were actually lower this time than they had been in his first two appearances; his center of gravity was scarcely higher than it had been when he had half reclined on the chaise; but his head was considerably higher—enough to account nicely for the time lapse. Thus I located the 'temporal determinant'—as I have been calling it to myself—in the area of the frontal lobes of the brain. When you were lying on the day bed, Westing, this spot was fifty centimeters from the floor; when you were in the chaise, seventy-four centimeters; and when you sat in that low chair, ninety-two and one-half centimeters. From these figures an easy calculation showed that one centimeter equaled four hours of duration. Dodson himself arrived at the same figure, doubtless when he noted that the hands of that large clock on the wall appeared to jump when he moved his head. As a true scientist he expressed it in the pure cgs system: vertical displacement times fourteen thousand four hundred seconds per centimeter equals duration."

"And he wrote it on that slip of paper."

Street nodded. "At some time in our future, since if it had been in the past we could not have put the paper in motion, as we did, by

setting up a fan in the present with assurances that it would remain in operation for some time. Doubtless he used one of the laboratory benches as an impromptu writing desk, and I have calculated that when he stood erect he was in November sixth."

"Where we will doubtless see him," Wide said.

"I think not."

"But, Street," I interrupted, "why should that note have undergone the same dislocation?"

"Why should other inanimate objects behave as they do? Unquestionably because they have been in contact with us, and there is, as far as we know, no natural opposing force which behaves as Dodson. There was, of course, some danger in grasping the note, but I counted on my own greater mass to wrench it from its unnatural space-time orientation. I had noted, you see, that Miss Dodson's descriptions of her 'father' did not state that he was nude, something she would undoubtedly have commented on had that been the case—ergo, he could be said to bend his clothing into his own reference frame."

"But why did he vanish," Miss Dodson demanded tearfully, "whenever he saw me?"

"He did not vanish," Street replied, "he simply stood up, and, standing, passed into November sixth, as I have already explained. The first time because he heard you call his name, the second because you startled him by dropping glassware, and the third time because, as a gentleman of the old school, he automatically rose when a woman entered the room. He doubtless realized later that he could reappear to you by taking his seat once more, but he was loath to frighten you, and hoped he could think his way out of his predicament; the hint he required for that I believe I have provided: you see, when I stood on my head just now I appeared to Dodson at about the time he suffered his unfortunate accident; the formula I have already quoted, plus the knowledge that Dodson had vanished thirteen days ago, allowed me to calculate that all I need do was to

place my own 'temporal determinant'—the area of my frontal lobes—fourteen centimeters above the floor."

"But where is he now?"

Street shrugged. "I have no way of knowing, really. Obviously, he is not here. He might be at the opera or attending a seminar, but it seems most probable that he is in the apartment below us." He raised his voice. "Professor! Professor Dodson, are you down there?"

A moment later I saw a man of less than medium height, with white hair and a straggling yellow mustache, appear at the foot of the escalator. It was Professor Dodson! "What is it?" he asked testily. "Alice, who the hell are these people?"

"Friends," she sobbed. "Won't you please come up? Mr. Street, is it all right if he comes up?"

"It would be better," Street said gently, "if you went down to him. He must pack for that trip to the seaside, you know." While Miss Dodson was running down the escalator, he called to the man below, "What project engages you at the moment, Professor?"

Dodson looked irritated, but replied, "A monograph on the nature of pragmatic time, young man. I had a mysterious—" His mouth was stopped with kisses.

Beside me St. Louis said softly, "Stay tuned for Ralph the Dancing Moose," but I was perhaps the only one who heard him.

Much later, when we were returning home on the monorail after Street had collected his fee from Wide, I said: "Street, there are several things I still don't understand about that case. Was that girl Dodson's daughter—or wasn't she?"

The rain drummed against the windows, and Street's smile was a trifle bitter. "I don't know why it is, Westing, that our society prefers disguising the love of elderly scientists as parenthood to regularizing it as marriage; but it does, and we must live and work in the world we find."

"May I ask one more question, Street?"

"I suppose so." My friend slouched wearily in his seat and pushed

the deerstalker cap he always affected over his eyes. "Fire away, Westing."

"You told him to go down the escalator, but I don't see how that could help him—he would have ended up, well, goodness knows where."

"When," Street corrected me. "Goodness knows when. Actually I calculated it as July twenty-fourth, more or less."

"Well, I don't see how that could have helped him. And wouldn't we have seen him going down? I mean, when the top of his head reached the right level—"

"We could," Street answered sleepily. "I did. That was why I could speak so confidently. You didn't because you were all looking at me, and I didn't call your attention to it because I didn't want to frighten Miss Dodson."

"But I still don't see how his going down could have straightened out what you call his bend in orientation. He would just be downstairs sometime in July, and as helpless as ever."

"Downstairs," Street said, "but not helpless. He called himself—in his lab upstairs—on the Tri-D-phone and told himself not to do it. Fortunately a man of Dodson's age is generally wise enough to take his own advice. So you see, the bend was only a rubber bend after all; it was capable of being snapped back, and I snapped it."

"Street," I said a few minutes later, "are you asleep?"

"Not now I'm not."

"Street, is Wide's real name—I mean, is it really Wide?"

"I understand he is of Montenegrin manufacture, and it's actually something unpronounceable; but he's used Wide for years."

"The first time I was in his office—there was some correspondence on his desk, and one of the envelopes was addressed to Wolfe."

"That was intended for the author of this story," Street said sleepily. "Don't worry, Wide will forward it to him."

The Marvelous Brass Chessplaying Automaton

Each day Lame Hans sits with his knees against the bars, playing chess with the machine. Though I have seen the game often, I have never learned to play, but I watch them as I sweep. It is a beautiful game, and Lame Hans has told me of its beginnings in the great ages now past; for that reason I always feel a sympathy toward the little pawns with their pencils and wrenches and plain clothing, each figure representing many generations of those whose labor built the great bishops that split the skies in the days of the old wars.

I feel pity for Lame Hans also. He talks to me when I bring his food, and sometimes when I am cleaning the jail. Let me tell you his story, as I have learned it in the many days since the police drew poor Gretchen out and laid her in the dust of the street. Lame Hans would never tell you himself—for all that big, bulging head, his tongue is slow and halting when he speaks of his own affairs.

It was last summer during the truce that the showman's cart was driven into our village. For a month not a drop of rain had fallen; each day at noon Father Karl rang the church bells, and women went in to pray for rain for their husbands' crops. After dark, many of these same women met to form lines and circles on the slopes of the Schlossberg, the mountain that was once a great building. The lines and circles are supposed to influence the Weatherwatchers, whose winking lights pass so swiftly through the starry sky. For myself, I

do not believe it. What men ever made a machine that could see a few old women on the mountainside at night?

So it was when the cart of Herr Heitzmann the mountebank came. The sun was down, but the street still so hot that the dogs would not bark for fear of fainting, and the dust rolled away from the wheels in waves, like grain when foxes run through the fields.

This cart was shorter than a farm wagon, but very high, with such a roof as a house has. The sides had been painted, and even I, who do not play, but have so often watched Albricht the moneylender play Father Karl, or Doctor Eckardt play Burgermeister Landsteiner, recognized the mighty figures of the Queen-Computers who lead the armies of the field of squares into battle; and the haughty King-Generals who command, and if they fall, bring down all.

A small, bent man drove. He had a head large enough for a giant—that was Lame Hans, but I paid little attention to him, not knowing that he and I would be companions here in the jail where I work. Beside him sat Heitzmann the mountebank, and it was he who took one's eyes, which was as he intended. He was tall and thin, with a sharp chin and a large nose and snapping black eyes. He had velvet trousers and a fine hat which sweat had stained around the band, and long locks of dark hair that hung from under it at odd angles so that one knew he used the finger-comb when he woke, as drunkards do who find themselves beneath a bench. When the small man brought the cart through the innyard gate, I rose from my seat on the jail steps and went across to the inn parlor. And it was a fortunate thing I did so, because it was in this way that I chanced to see the famous game between the brass machine and Professor Baumeister.

Haven't I mentioned Professor Baumeister before? Have you not noticed that in a village such as ours there are always a dozen celebrities? Always a man who is strong (with us that is Willi Schacht, the smith's apprentice), one who eats a great deal, a learned man like Doctor Eckardt, a ladies' man, and so on. But for all these

people to be properly admired, there must also be a distinguished visitor to whom to point them out, and here in Oder Spree that is Professor Baumeister, because our village lies midway between the University and Furstenwald, and it is here that he spends the night whenever he journeys from one to the other, much to the enrichment of Scheer the innkeeper. The fact of the matter is that Professor Baumeister has become one of our celebrities himself, only by spending the night here so often. With his broad brown beard and fine coat and tall hat and leather riding breeches, he gives the parlor of our inn the air of a gentlemen's club.

I have heard that it is often the case that the beginning of the greatest drama is as casual as any commonplace event. So it was that night. The inn was full of off-duty soldiers drinking beer, and because of the heat all the windows were thrown open, though a dozen candles were burning. Professor Baumeister was deep in conversation with Doctor Eckardt; something about the war. Herr Heitzmann the mountebank—though I did not know what to call him then—had already gotten his half liter when I came in, and was standing at the bar.

At last, when Professor Baumeister paused to emphasize some point, Herr Heitzmann leaned over to them, and in the most offhand way asked a question. It was peculiar, but the whole room seemed to grow silent as he spoke, so that he could be heard everywhere, though it was no more than a whisper. He said: "I wonder if I might venture to ask you gentlemen—you both appear to be learned men—if, to the best of your knowledge, there still exists even one of those great computational machines which were perhaps the most extraordinary—I trust you will agree with me?—creations of the age now past."

Professor Baumeister said at once: "No, sir. Not one remains."

"You feel certain of this?"

"My dear sir," said Professor Baumeister, "you must understand that those devices were dependent upon a supply of replacement parts consisting of the most delicate subminiature electronic components.

These have not been produced now for over a hundred years—indeed, some of them have been unavailable longer."

"Ah," Herr Heitzmann said (mostly to himself, it seemed, but you could hear him in the kitchen). "Then I have the only one."

Professor Baumeister attempted to ignore this amazing remark, as not having been addressed to himself; but Doctor Eckardt, who is of an inquisitive disposition, said boldly: "You have such a machine, Herr...?"

"Heitzmann. Originally of Berlin, now come from Zurich. And you, my good sir?"

Doctor Eckardt introduced himself, and Professor Baumeister too, and Herr Heitzmann clasped them by the hand. Then the doctor said to Professor Baumeister: "You are certain that no computers remain in existence, my friend?"

The professor said: "I am referring to working computers—machines in operating condition. There are plenty of old hulks in museums, of course."

Herr Heitzmann sighed, and pulled out a chair and sat down at the table with them, bringing his beer. "Would it not be sad," he said, "if those world-ruling machines were lost to mankind forever?"

Professor Baumeister said dryly: "They based their extrapolations on numbers. That worked well enough as long as money, which is easily measured numerically, was the principal motivating force in human affairs. But as time progressed, human actions became responsive instead to a multitude of incommensurable vectors; the computers' predictions failed, the civilization they had shaped collapsed, and parts for the machines were no longer obtainable or desired."

"How fascinating!" Herr Heitzmann exclaimed. "Do you know, I have never heard it explained in quite that way. You have provided me, for the first time, with an explanation for the survival of my own machine."

Doctor Eckardt said, "You have a working computer, then?"

"I do. You see, mine is a specialized device. It was not designed, like the computers the learned professor spoke of just now, to predict human actions. It plays chess."

"And where do you keep this wonderful machine?" By this time everyone else in the room had fallen silent. Even Scheer took care not to allow the glasses he was drying to clink; and Gretchen, the fat blond serving girl who usually cracked jokes with the soldiers and banged down their plates, moved through the pipe smoke among the tables as quietly as the moon moves in a cloudy sky.

"Outside," Herr Heitzmann replied. "In my conveyance. I am taking it to Dresden."

"And it plays chess."

"It has never been defeated."

"Are you aware," Professor Baumeister inquired sardonically, "that to program a computer to play chess—to play well—was considered one of the most difficult problems? That many judged that it was never actually solved, and that those machines which most closely approached acceptable solutions were never so small as to be portable?"

"Nevertheless," Herr Heitzmann declared, "I have such a machine."

"My friend, I do not believe you."

"I take it you are a player yourself," Herr Heitzmann said. "Such a learned man could hardly be otherwise. Very well. As I said a moment ago, my machine is outside." His hand touched the table between Professor Baumeister's glass and his own, and when it came away five gold kilomarks stood there in a neat stack. "I will lay these on the outcome of the game, if you will play my machine tonight."

"Done," said Professor Baumeister.

"I must see your money."

"You will accept a draft on Streicher's, in Furstenwald?"

And so it was settled. Doctor Eckardt held the stakes, and six men volunteered to carry the machine into the inn parlor under Herr Heitzmann's direction.

Six were not too many, though the machine was not as large as might have been expected—not more than a hundred and twenty centimeters high, with a base, as it might be, a meter on a side. The sides and top were all of brass, set with many dials and other devices no one understood.

When it was at last in place, Professor Baumeister viewed it from all sides and smiled. "This is not a computer," he said.

"My dear friend," said Herr Heitzmann, "you are mistaken."

"It is several computers. There are two keyboards and a portion of a third. There are even two nameplates, and one of these dials once belonged to a radio."

Herr Heitzmann nodded. "It was assembled at the very close of the period, for one purpose only—to play chess."

"You still contend that this machine can play?"

"I contend more. That it will win."

"Very well. Bring a board."

"That is not necessary," Herr Heitzmann said. He pulled a knob at the front of the machine, and a whole section swung forward, as the door of a vegetable bin does in a scullery. But the top of this bin was not open as though to receive the vegetables; it was instead a chessboard, with the white squares of brass, and the black of smoky glass, and on the board, standing in formation and ready to play, were two armies of chessmen such as no one in our village had ever seen, tall metal figures so stately they might have been sculptured apostles in a church, one army of brass and the other of some dark metal. "You may play white," Herr Heitzmann said. "That is generally considered an advantage."

Professor Baumeister nodded, advanced the white king's pawn two squares, and drew a chair up to the board. By the time he had seated himself the machine had replied, moving so swiftly that no one saw by what mechanism the piece had been shifted.

The next time Professor Baumeister acted more slowly, and everyone watched, eager to see the machine's countermove. It came the

moment the professor had set his piece in its new position—the black queen slid forward silently, with nothing to propel it.

After ten moves Professor Baumeister said, "There is a man inside."

Herr Heitzmann smiled. "I see why you say that, my friend. Your position on the board is precarious."

"I insist that the machine be opened for my examination."

"I suppose you would say that if a man were concealed inside, the bet would be canceled." Herr Heitzmann had ordered a second glass of beer, and was leaning against the bar watching the game.

"Of course. My bet was that a machine could not defeat me. I am well aware that certain human players can."

"But conversely, if there is no man in the machine, the bet stands?"

"Certainly."

"Very well." Herr Heitzmann walked to the machine, twisted four catches on one side, and with the help of some onlookers removed the entire panel. It was of brass, like the rest of the machine but, because the metal was thin, not so heavy as it appeared.

There was more room inside than might have been thought, yet withal a considerable amount of mechanism: things like shingles the size of little tabletops, all covered with patterns like writing (Lame Hans has told me since that these are called circuit cards). And gears and motors and the like.

When Professor Baumeister had poked among all these mechanical parts for half a minute, Herr Heitzmann asked: "Are you satisfied?"

"Yes," answered Professor Baumeister, straightening up. "There is no one in there."

"But *I* am not," said Herr Heitzmann, and he walked with long strides to the other side of the machine. Everyone crowded around him as he released the catches on that side, lifted away the panel, and stood it against the wall. "Now," he said, "you can see completely through my machine—isn't that right? Look, do you see Doctor Eckardt? Do you see me? Wave to us."

"I am satisfied," Professor Baumeister said. "Let us go on with the game."

"The machine has already taken its move. You may think about your next one while these gentlemen help me replace the panels."

Professor Baumeister was beaten in twenty-two moves. Albricht the moneylender then asked if he could play without betting, and when this was refused by Herr Heitzmann, bet a kilomark and was beaten in fourteen moves. Herr Heitzmann asked then if anyone else would play, and when no one replied, requested that the same men who had carried the machine into the inn assist him in putting it away again.

"Wait," said Professor Baumeister.

Herr Heitzmann smiled. "You mean to play again?"

"No. I want to buy your machine. On behalf of the University."

Herr Heitzmann sat down and looked serious. "I doubt that I could sell it to you. I had hoped to make a good sum in Dresden before selling it there."

"Five hundred kilomarks."

Herr Heitzmann shook his head. "That is a fair proposition," he said, "and I thank you for making it. But I cannot accept."

"Seven hundred and fifty," Professor Baumeister said. "That is my final offer."

"In gold?"

"In a draft on an account the University maintains in Furstenwald—you can present it there for gold the first thing in the morning."

"You must understand," said Herr Heitzmann, "that the machine requires a certain amount of care, or it will not perform properly."

"I am buying it as is," said Professor Baumeister. "As it stands here before us."

"Done, then," said Herr Heitzmann, and he put out his hand.

The board was folded away, and six stout fellows carried the machine into the professor's room for safekeeping, where he remained with it for an hour or more. When he returned to the inn

parlor at last, Doctor Eckardt asked if he had been playing chess again.

Professor Baumeister nodded. "Three games."

"Did you win?"

"No, I lost them all. Where is the showman?"

"Gone," said Father Karl, who was sitting near them. "He left as soon as you took the machine to your room."

Doctor Eckardt said, "I thought he planned to stay the night here."

"So did I," said Father Karl. "And I confess I believed the machine would not function without him. I was surprised to hear that our friend the professor had been playing in private."

Just then a small, twisted man, with a large head crowned with wild black hair, limped into the inn parlor. It was Lame Hans, but no one knew that then. He asked Scheer the innkeeper for a room.

Scheer smiled. "Sitting rooms on the first floor are a hundred marks," he said. He could see by Lame Hans's worn clothes that he could not afford a sitting room.

"Something cheaper."

"My regular rooms are thirty marks. Or I can let you have a garret for ten."

Hans rented a garret room, and ordered a meal of beer, tripe, and kraut. That was the last time anyone except Gretchen noticed Lame Hans that night.

And now I must leave off recounting what I myself saw, and tell many things that rest solely on the testimony of Lame Hans, given to me while he ate his potato soup in his cell. But I believe Lame Hans to be an honest fellow; and as he no longer, as he says, cares much to live, he has no reason to lie.

One thing is certain. Lame Hans and Gretchen the serving girl fell in love that night. Just how it happened I cannot say—I doubt that Lame Hans himself knows. She was sent to prepare the cot in his garret. Doubtless she was tired after drawing beer in the parlor all

day, and was happy to sit for a few moments and talk with him. Perhaps she smiled—she was always a girl who smiled a great deal—and laughed at some bitter joke he made. And as for Lame Hans, how many blue-eyed girls could ever have smiled at him, with his big head and twisted leg?

In the morning the machine would not play chess.

Professor Baumeister sat before it for a long time, arranging the pieces and making first one opening and then another, and tinkering with the mechanism; but nothing happened.

And then, when the morning was half gone, Lame Hans came into his room. "You paid a great deal of money for this machine," he said, and sat down in the best chair.

"Were you in the inn parlor last night?" asked Professor Baumeister. "Yes, I paid a great deal; seven hundred and fifty kilomarks."

"I was there," said Lame Hans. "You must be a very rich man to be able to afford such a sum."

"It was the University's money," explained Professor Baumeister.

"Ah," said Lame Hans. "Then it will be embarrassing for you if the machine does not play."

"It does play," said the professor. "I played three games with it last night after it was brought here."

"You must learn to make better use of your knights," Lame Hans told him, "and to attack on both sides of the board at once. In the second game you played well until you lost the queen's rook; then you went to pieces."

The professor sat down, and for a moment said nothing. And then: "You are the operator of the machine. I was correct in the beginning; I should have known."

Lame Hans looked out the window.

"How did you move the pieces—by radio? I suppose there must still be radio-control equipment in existence somewhere."

"I was inside," Lame Hans said. "I'll show you sometime; it's not important. What will you tell the University?"

"That I was swindled, I suppose. I have some money of my own, and I will try to pay back as much as I can out of that—and I own two houses in Furstenwald that can be sold."

"Do you smoke?" asked Lame Hans, and he took out his short pipe, and a bag of tobacco.

"Only after dinner," said the professor, "and not often then."

"I find it calms my nerves," said Lame Hans. "That is why I suggested it to you. I do not have a second pipe, but I can offer you some of my tobacco, which is very good. You might buy a clay from the innkeeper here."

"No, thank you. I fear I must abandon such little pleasures for a long time to come."

"Not necessarily," said Lame Hans. "Go ahead, buy that pipe. This is good Turkish tobacco—would you believe, to look at me, that I know a great deal about tobacco? It has been my only luxury."

"If you are the one who played chess with me last night," Professor Baumeister said, "I would be willing to believe that you know a great deal about anything. You play like the devil himself."

"I know a great deal about more than tobacco. Would you like to get your money back?"

And so it was that that very afternoon (if it can be credited), the mail coach carried away bills printed in large black letters. These said:

IN THE VILLAGE OF ODER SPREE
BEFORE THE INN OF THE GOLDEN APPLES
ON SATURDAY
AT 9:00 O'CLOCK
THE MARVELOUS BRASS CHESSPLAYING AUTOMATON WILL
BE ON DISPLAY
FREE TO EVERYONE
AND WILL PLAY ANY CHALLENGER
AT EVEN ODDS
TO A LIMIT OF DM 2,000,000

Now, you will think from what I have told you that Lame Hans was a cocky fellow, but that is not the case, though like many of us who are small of stature he pretended to be self-reliant when he was among men taller than he. The truth is that though he did not show it he was very frightened when he met Herr Heitzmann (as the two of them had arranged earlier that he should) in a certain malodorous tavern near the Schwarzthor in Furstenwald.

"So there you are, my friend," said Herr Heitzmann. "How did it go?"

"Terribly," Lame Hans replied as though he felt nothing. "I was locked up in that brass snuffbox for half the night, and had to play twenty games with that fool of a scholar. And when at last I got out, I couldn't get a ride here and had to walk most of the way on this bad leg of mine. I trust it was comfortable on the cart seat? The horse didn't give you too much trouble?"

"I'm sorry you've had a poor time of it, but now you can relax. There's nothing more to do until he's convinced the machine is broken and irreparable."

Lame Hans looked at him as though in some surprise. "You didn't see the signs? They are posted everywhere."

"What signs?"

"He's offering to bet two thousand kilomarks that no one can beat the machine."

Herr Heitzmann shrugged. "He will discover that it is inoperative before the contest, and cancel it."

"He could not cancel after the bet was made," said Lame Hans. "Particularly if there were a proviso that if either were unable to play, the bet was forfeited. Some upright citizen would be selected to hold the stakes, naturally."

"I don't suppose he could at that," said Herr Heitzmann, taking a swallow of schnapps from the glass before him. "However, he wouldn't bet *me*—he'd think I knew some way to influence the machine. Still, he's never seen *you*."

"Just what I've been thinking myself," said Lame Hans, "on my hike."

"It's a little out of your line."

"If you'll put up the cash, I'd be willing to go a little out of my line for my tenth of that kind of money. But what is there to do? I make the bet, find someone to hold the stakes, and stand ready to play on Saturday morning. I could even offer to play him—for a smaller bet—to give him a chance to get some of his own back. That is, if he has anything left after paying off. It would make it seem more sporting."

"You're certain you could beat him?"

"I can beat anybody—you know that. Besides, I beat him a score of times yesterday; the game you saw was just the first."

Herr Heitzmann ducked under the threatening edge of a tray carried by an overenthusiastic waiter. "All the same," he said, "when he discovers it won't work..."

"I could even spend a bit of time in the machine. That's no problem. It's in a first-floor room, with a window that won't lock."

And so Lame Hans left for our village again, this time considerably better dressed and with two thousand kilomarks in his pocket. Herr Heitzmann, with his appearance considerably altered by a plastiskin mask, left also, an hour later, to keep an eye on the two thousand.

"But," the professor said when Lame Hans and he were comfortably ensconced in his sitting room again, with pipes in their mouths and glasses in their hands and a plate of sausage on the table, "but who is going to operate the machine for us? Wouldn't it be easier if you simply didn't appear? Then you would forfeit."

"And Heitzmann would kill me," said Lame Hans.

"He didn't strike me as the type."

"He would hire it done," Hans said positively. "Whenever he got the cash. There are deserters about who are happy enough to do that kind of work for drinking money. For that matter, there are soldiers

who aren't deserters who'll do it—men on detached duty of one kind and another. When you've spent all winter slaughtering Russians, one more body doesn't make much difference." He blew a smoke ring, then ran the long stem of his clay pipe through it as though he were driving home a bayonet. "But if I play the machine and lose, he'll only think you figured things out and got somebody to work it, and that I'm not as good as he supposed. Then he won't want anything more to do with me."

"All right, then."

"A tobacconist should do well in this village, don't you think? I had in mind that little shop two doors down from here. When the coaches stop, the passengers will see my sign; there should be many who'll want to fill their pouches."

"Gretchen prefers to stay here, I suppose."

Lame Hans nodded. "It doesn't matter to me. I've been all over, and when you've been all over, it's all the same."

Like everyone else in the village, and for fifty kilometers around, I had seen the professor's posters, and I went to bed Friday night full of pleasant anticipation. Lame Hans has told me that he retired in the same frame of mind, after a couple of glasses of good plum brandy in the inn parlor with the professor. He and the professor had to appear strangers and antagonists in public, as will be readily seen; but this did not prevent them from eating and drinking together while they discussed arrangements for the match, which was to be held—with the permission of Burgermeister Landsteiner—in the village street, where an area for the players had been cordoned off and high benches erected for the spectators.

Hans woke (so he has told me) when it was still dark, thinking that he had heard thunder. Then the noise came again, and he knew it must be the artillery, the big siege guns, firing at the Russians trapped in Kostrzyn. The army had built wood-fired steam tractors to pull those guns—he had seen them in Wriezen—and now the soldiers were talking about putting armor on the tractors and

mounting cannon, so the knights of the chessboard would exist in reality once more.

The firing continued, booming across the dry plain, and he went to the window to see if he could make out the flashes, but could not. He put on a thin shirt and a pair of cotton trousers (for though the sun was not yet up, it was as hot as if the whole of Brandenburg had been thrust into a furnace) and went into the street to look at the empty shop in which he planned to set up his tobacco business. A squadron of *Ritters* galloped through the village, doubtless on their way to the siege. Lame Hans shouted, "What do you mean to do? Ride your horses against the walls?" but they ignored him. Now that the truce was broken, Von Koblenz's army would soon be advancing up the Oder Valley, Lame Hans thought. The Russians were said to have been preparing powered balloons to assist in the defense, and this hot summer weather, when the air seemed never to stir, would favor their use. He decided that if he were the Commissar, he would allow Von Koblenz to reach Glogow, and then...

But he was not the Commissar. He went back into the inn and smoked his pipe until Frau Scheer came down to prepare his breakfast. Then he went to the professor's room where the machine was kept. Gretchen was already waiting there.

"Now then," Professor Baumeister said, "I understand that the two of you have it all worked out between you." And Gretchen nodded solemnly, so that her plump chin looked like a soft little pillow pressed against her throat.

"It is quite simple," said Lame Hans. "Gretchen does not know how to play, but I have worked out the moves for her and drawn them on a sheet of paper, and we have practiced in my room with a board. We will run through it once here when she is in the machine; then there will be nothing more to do."

"Is it a short game? It won't do for her to become confused."

"She will win in fourteen moves," Lame Hans promised. "But still it is unusual. I don't think anyone has done it before. You will see in a moment."

To Gretchen, Professor Baumeister said: "You're sure you won't be mixed up? Everything depends on you."

The girl shook her head, making her blond braids dance. "No, Herr Professor." She drew a folded piece of paper from her bosom. "I have it all here, and as my Hans told you, we have practiced in his room, where no one could see us."

"You aren't afraid?"

"When I am going to marry Hans, and be mistress of a fine shop? Oh, no, Herr Professor—for that I would do much worse things than to hide in this thing that looks like a stove, and play a game."

"We are ready, then," the professor said. "Hans, you still have not explained how it is that a person can hide in there, when the sides can be removed allowing people to look through the machinery. And I confess I still don't understand how it can be done, or how the pieces are moved."

"Here," said Lame Hans, and he pulled out the board as Herr Heitzmann had done in the inn parlor. "Now will you assist me in removing the left side? You should learn the way it comes loose, Professor—someday you may have to do it yourself." (The truth was that he was not strong enough to handle the big brass sheet by himself, and did not wish to be humiliated before Gretchen.)

"I had forgotten how much empty space there is inside," Professor Baumeister said when they had it off. "It looks more impossible than ever."

"It is simple, like all good tricks," Lame Hans told him. "And it is the sign of a good trick that it is the thing that makes it appear difficult that makes it easy. Here is where the chessboard is, you see, when it is folded up. But when it is unfolded, the panel under it swings out on a hinge to support it, and there are sides, so that a triangular space is formed."

The professor nodded and said, "I remember thinking when I played you that it looked like a potato bin, with the chessboard laid over the top."

"Exactly," Lame Hans continued. "The space is not noticeable

when the machine is open, because this circuit card is just in front of it. But see here." And he released a little catch at the top of the circuit card, and pivoted it up to show the empty space behind it. "I am in the machine when it is carried in, but when Heitzmann pulls out the board, I lift this and fit myself under it; then, when the machine is opened for inspection, I am out of view. I can look up through the dark glass of the black squares, and because the pieces are so tall, I can make out their positions. But because it is bright outside, but dim where I am, I cannot be seen."

"I understand," said the professor. "But will Gretchen have enough light in there to read her piece of paper?"

"That was why I wanted to hold the match in the street. With the board in sunshine, she will be able to see her paper clearly."

Gretchen was on her knees, looking at the space behind the circuit card. "It is very small in there," she said.

"It is big enough," said Lame Hans. "Do you have the magnet?" And then to the professor: "The pieces are moved by moving a magnet under them. The white pieces are brass, but the black ones are of iron, and the magnet gives them a sliding motion that is very impressive."

"I know," said the professor, remembering that he had felt a twinge of uneasiness whenever the machine had shifted a piece. "Gretchen, see if you can get inside."

The poor girl did the best she could, but encountered the greatest difficulty in wedging herself into the small space under the board. Work in the kitchen of the inn had provided her with many opportunities to snatch a mouthful of pastry or a choice potato dumpling or a half stein of dark beer, and she had availed herself of most of them—with the result that she possessed a lush and blooming figure of the sort that appeals to men like Lame Hans, who, having been withered before birth by the isotopes of the old wars, are themselves thin and small by nature. But though full breasts like ripe melons, and a rounded, comfortable stomach and generous hips, may be pleasant things to look at when the

moonlight comes in the bedroom window, they are not really well-suited to folding up in a little three-cornered space under a chessboard, and in the end, poor Gretchen was forced to remove her gown, and her shift as well, before she could cram herself, with much gasping and grunting, into it.

An hour later, Willi Schacht the smith's apprentice and five other men carried the machine out into the street and set it in the space that had been cordoned off for the players, and if they noticed the extra weight, they did not complain of it. And there the good people who had come to see the match looked at the machine, and fanned themselves, and said that they were glad they weren't in the army on a day like this— because what must it be to serve one of those big guns, which get hot enough to poach an egg after half a dozen shots, even in ordinary weather? And between moppings and fannings they talked about the machine, and the mysterious Herr Zimmer (that was the name Lame Hans had given) who was going to play it for two hundred gold kilomarks.

Nine chimes sounded from the old clock in the steeple of Father Karl's church, and Herr Zimmer did not appear.

Doctor Eckardt, who had been chosen again to hold the stakes, came forward and whispered for some time with Professor Baumeister. The professor (if the truth were known) was beginning to believe that perhaps Lame Hans had decided it was best to forfeit after all—though in fact, if anyone had looked, he would have seen Lame Hans sitting at the bar of the inn at that very moment, having a pleasant nip of plum brandy and then another, while he allowed the suspense to build up as a good showman should.

At last Doctor Eckardt climbed upon a chair and announced: "It is now nearly ten. When the bet was made, it was agreed by both parties that if either failed to appear—or appearing, failed to play—the other should be declared the winner. If the worthy stranger, Herr Zimmer, does not make an appearance before ten

minutes past ten, I intend to award the money entrusted to me to our respected acquaintance Professor Baumeister."

There was a murmur of excitement at this, but just when the clock began to strike, Lame Hans called from the door of the inn: "WAIT!" Then hats were thrown into the air, and women stood on toetips to see; and fathers lifted their children up as the lame Herr Zimmer made his way down the steps of the inn and took his place in the chair that had been arranged in front of the board.

"Are you ready to begin?" said Doctor Eckardt.

"I am," said Lame Hans, and opened.

The first five moves were made just as they had been rehearsed. But in the sixth, in which Gretchen was to have slid her queen half across the board, the piece stopped a square short.

Any ordinary player would have been dismayed, but Lame Hans was not. He only put his chin on his hand, and contrived (though wishing he had not drunk the brandy) a series of moves within the frame of the fourteen-move game, by which he should lose despite the queen's being out of position. He made the first of these moves; and black moved the queen again, this time in a way that was completely different from anything on the paper Hans had given Gretchen. *She was deceiving me when she said she did not know how to play,* he thought to himself. *And now she finds she can't read the paper in there, or perhaps she has decided to surprise me. Naturally she would learn the fundamentals of the game, when it is played in the inn parlor every night.* (But he knew that she had not been deceiving him.) Then he saw that this new move of the queen's was in fact a clever attack, into which he could play and lose.

And then the guns around Kostrzyn, which had been silent since the early hours of the morning, began to boom again. Three times Lame Hans's hand stretched out to touch his king and make the move that would render it quite impossible for him to escape the queen, and three times it drew back. "You have five minutes in which to move," Doctor Eckardt said. "I will tell you when only thirty seconds remain, and count the last five."

The machine was built to play chess, thought Lame Hans. *Long ago, and they were warlocks in those days. Could it be that Gretchen, in kicking about...?*

Some motion in the sky made him raise his eyes, looking above the board and over the top of the machine itself. An artillery observation balloon (gray-black, a German balloon then) was outlined against the blue sky. He thought of himself sitting in a dingy little shop full of tobacco all day long, and no one to play chess with—no one he could not checkmate easily.

He moved a pawn, and the black bishop slipped out of the king's row to tighten the net.

If he won, they would have to pay him. Heitzmann would think everything had gone according to plan, and Professor Baumeister, surely, would hire no assassins. He launched his counterattack; the real attack at the left side of the board, with a false one down the center. Professor Baumeister came to stand beside him, and Doctor Eckardt warned him not to distract the player. There had been seven more than fourteen moves—and there was a trap behind the trap.

He took the black queen's knight and lost a pawn. He was sweating in the heat, wiping his brow with his sleeve between moves.

A black rook, squat in its iron sandbags, advanced three squares, and he heard the crowd cheer. "That is mate, Herr Zimmer," Doctor Eckardt announced. He saw the look of relief on Professor Baumeister's face, and knew that his own was blank. Then over the cheering someone shouted: *"Cheat! Cheat!"* Gray-black pillbox police caps were forcing their way through the hats and parasols of the spectators.

"There is a man in there! There is someone inside!" It was too clear and too loud—a showman's voice. A tall stranger was standing on the topmost bench waving Heitzmann's sweat-stained velvet hat.

A policeman asked: "The machine opens, does it not, Herr Professor? Open it quickly before there is a riot."

Professor Baumeister said, "I don't know how."

"It looks simple enough," declared the other policeman, and he

began to unfasten the catches, wrapping his hand in his handkerchief to protect it from the heat of the brass. "Wait!" ordered Professor Baumeister, but neither one waited; the first policeman went to the aid of the other, and together they lifted away one side of the machine and let it fall against the railing. The movable circuit card had not been allowed to swing back into place, and Gretchen's plump, naked legs protruded from the cavity beneath the chessboard. The first policeman seized them by the ankles and pulled her out until her half-open eyes stared at the bright sky. Doctor Eckardt bent over her and flexed her left arm at the elbow. "Rigor is beginning," he said. "She died of the heat, undoubtedly."

Lame Hans threw himself on her body weeping.

Such is the story of Lame Hans. The captain of police, in his kindness, has allowed me to push the machine to a position which permits Hans to reach the board through the bars of his cell, and he plays chess there all day long, moving first his own white pieces and then the black ones of the machine, and always losing. Sometimes when he is not quick enough to move the black queen, I see her begin to rock and to slide herself, and the dials and the console lights to glow with impatience; and then Hans must reach out and take her to her new position at once. Do you not think that this is sad for Lame Hans? I have heard that many who have been twisted by the old wars have these psychokinetic abilities without knowing it; and Professor Baumeister, who is in the cell next to his, says that someday a technology may be founded on them.

When I Was Ming the Merciless

"*Thank you. Is it* permissible for me to sit? Fine. No, I cannot complain, really....

"I'd like to say that everyone here has been as courteous as could be expected—that isn't quite true, actually, but you know what I mean. No one has struck me.

"No, I don't smoke. I'd appreciate some coffee, though. That was one of the things we missed—coffee. At least at first. There was a lot of tea in the supplies, but no coffee. I used to enjoy it while I was in there—tea, I mean—but now I can't tolerate the taste.

"I don't know if it was intentional or not. I thought you would know.

"It's odd that you should put it as you did. Because I've thought of it so often myself, since the end, in just that way. I remember how things used to be...the way I used to be myself, outside. And the next thing I think of is the psych-aids breaking through the wall with the butts of their guns, and the way my guards fought them. We had polearms, you know. Polearms and swords—the swords were reserved for officers. Somebody told me a few days ago that three of the psych-aids were hurt; but I feel sure it must have been more than that. We were surprised, of course—anyone would have been under the circumstances. Still, we fought well. My guards were well trained, and every one of them, man or woman, was a warrior of proven bravery.

"Listen, you don't have to stop him like that. That was a

legitimate question, 'Aren't you ashamed?' And I'll give him a legitimate answer—no, I am not ashamed. I am proud of the Empire, proud of what we did, proud of the way we fought at the end. It was a fight we couldn't win, but we fought well. That's what matters—fighting well. Who wins is a matter of chance and advantage.

"You don't have to tell me to relax; I am perfectly relaxed. I raised my voice only to bring home my point to you—it's a little trick I have, just like pounding the arm of the chair as I pronounce each word.

"We were talking about morality, and I feel that is a more fruitful and interesting subject; but I can tell you very briefly how we constructed our weapons, if you want—provided you understand that we are going to return to the moral question afterward.

"No, I feel no need whatsoever to justify myself—not to you or to anyone else. But I want to make you understand the imperatives of the situation. After all, that was the whole point of the experiment: to clarify the imperatives of that type of situation. What was the use of all that time....

"Oh Jesus, the building and the fighting....

"I'm sorry. I'm all right. Thank you for the coffee. The polearms were easy, really. There were several cleavers in the kitchen, and a lot of knives. We sawed the handles off brooms and mops, and joined two of them together. We made scarf joints at the ends—do you know what a scarf is? Like a step in the wood, to give the glue more area. There was a glue in the wood shop that was stronger than the wood itself, if you let it set up overnight. We made tests, you see. Glued up pieces and broke them afterward. We made saw-cuts in the ends of the poles, and put the knife blades into them, clamped them, and glued them in place. Afterward we put nails through the holes in the tangs—that was just extra insurance. Out here there will be more scope for ingenuity; we might even be able to get hold of some fissionables. Just joking, of course.

"In there, the cleavers were the best of the kitchen material. We

put them about twenty centimeters down the shaft, then put a boning-knife blade in the end. With a weapon like that, the warrior could hack or stab; it was almost as good as a sword.

"The swords were the most difficult to make—that was why I restricted them, made them only for officers. Then too, in that way they served as badges of rank. We tore up the floors in the Graphic Arts Center to get the steel reinforcing bars, and heated them in the furnace burner, then pounded them out. A lot of them broke, and had to be reforged—sometimes over and over. I had the best one, naturally. I suppose you people have it now?

"Yes, I suppose I *would* like to see it—I carried it in some good fights. You wouldn't understand about that. The hilt was bone, almost like ivory, and I had Althea burn the Lung-Rin into the bone. Althea was our best artist.

"The Lung-Rin? That is the symbol of the Empire—two dragons fighting.

"No, we didn't worship the Lung-Rin. It was a symbol, that's all. In the long run, if you know what I mean, *we* were the Lung-Rin. We had ceremonies, yes. We set up a figure to represent all the Yellows. Don made it of wood and leather, and that was the center of the ceremonies. Althea helped him with the face, and I had her make it look something like me—you understand, a little psychology. It's odd, but you can make a thing like that, and have everyone bow in front of it, and offer it the things we took in war, and after a time it becomes...I don't know, something more. More than just the figure you set up in the beginning. Have you talked to Don?

"He had a theory—I don't know whether he believed it himself. I didn't, but still....There was something in it. Do you understand what I mean? It wasn't true; but still....

"All right, here's what he thought. Or anyway, what he said he thought. That there are things we don't know about that live in the world with us—things in another plane of reality. And when you make something like that, it comes—one of them comes. It shapes itself to fit your image of it, becoming the real Spirit of the Yellows.

Anyway, when we had the torchlight processions, sometimes you might think you could see it move. It was just the flickering light, of course, and the fact that because it was so tall the face was illuminated from the bottom. Any face will look strange when you light it from below, I suppose. We caught rats and pigeons when we built it and put them inside, so it would make strange sounds; some of them must have lived a long time.

"No, I don't know what happened to it, and I don't care. You can't kill the *thing*, the Spirit of the Yellows. Not unless you kill all of us, and you won't do that. We'll be free someday. How could we forget? The experiment was the greatest thing in our lives. At night, before we had won, we used to sit around the fire—outside, the buildings were too dangerous then—and talk. You've never done that. You weren't there.

"No, not about what we were going to do when we won—at least, not mostly. Not even about our plans for the next day. Mostly we talked about our lives before the experiment. Each of us would tell the rotten things that had happened to him, and then someone else would talk. We never said it, but we were all thinking that it wasn't like that here. We were all together—all Yellows together. That was one of the first things we did, I think about the fourth day after the gates closed. We swore that we were going to stand together or fall together; there wasn't going to be any splitting. We had seen what happened to the Greens; they were always going in all directions; they wouldn't support each other. By the time they got organized it was too late. The others had the weapons and the organization and the fighting spirit. They'd been knocked down too much, and they'd been cut up too much—do you understand what I mean? If you take people like that, and beat them over and over and over again, most of them stay beaten. One or two will go the other way—become so hard and strong that they're as good as anything you've got. But not most of them. So when the one or two try and lead them, there's no support. Then too, there's the sexual effect. Maybe I shouldn't talk about this. Do you want to turn off the recorder?

"Well, all right. Everybody saw, almost from the beginning, that the women would have to fight just like the men. Jan was the best woman warrior we had, and she came out for it from the beginning. The Blues were already doing it, and if we didn't, we'd lose. Besides, if the women didn't fight, there couldn't be real equality, because if a woman said we ought to stand up to the other colors, all the men would say it wasn't her that was going to bleed.

"Some of the women didn't want to, of course. And some of the men didn't want to have them do it, either. I'd say that there were perhaps eight women against, and five men. That was where the drill came in. Most of all, there. It's hard—very hard to get people to drill. You've got to work it in a little bit at a time. But once they do it, they learn to obey orders, and when you say, 'Come on!' they follow. I started them with practice in using weapons (it was just the knives and clubs then) and formalized it later. I said even if they weren't going to fight, the least they could do was practice with the rest of us; and then if they had to sometime, they'd know how. Of course after we were better organized I could have simply ordered it; but I didn't have that kind of authority then—I wasn't Emperor.

"No, I was a political science major. A lot were psych students, and a lot more were from the school of sociology. I never noticed that they behaved differently than the rest of us.

"What I was coming to, was that when a man—a male, let's call him—has been fighting a woman, and he wins and knocks her down, and she drops whatever it is she has, a club or whatever, and perhaps she's bleeding where he cut her or broke her lip, and often her shirt and shorts are torn, there is an impulse that takes command. Perhaps women don't feel that way, but men do. And then, when a woman has had that happen once or twice, it takes everything out of them. They won't fight anymore; they just want to run, or sometimes to hide. Some of the men said that they really liked it, underneath, but I don't think so. Still, they were the ones, mostly, who wanted to join us.

"No, of course we didn't let them. We couldn't let them. That was

the point of the whole thing. We had the bands—I've still got mine, see, around my wrist—and we couldn't get them off. You can't get them off. Once they clamped your bracelet on you, you were a Yellow or a Blue or a Green; and that was it. Some of the Greens, particularly, tried to cut them off before we got control of all the tools. It couldn't be done; a file won't even scratch them.

"Did that bother you? The clothes? Yes, we had colored clothes to begin with—yellow shorts and shirts. But they didn't really matter; it was the wristbands. In the end I had all my guards go naked to the waist, with just a strip of yellow cloth around their heads to identify them. You see, I had noticed that the braver someone was, the more torn up their shirts got, until the best of them really didn't have any at all.

"Yes, the women too. I'll tell you a secret. When you go out to fight, anything you can do that will make you look different—strange—helps. It takes the heart out of the others. I think the Blues had the advantage at first—those dark blue shirts and shorts. They looked like Federal Police. But the naked chests and the yellow head-rags took care of that. We kept together and came at them in a solid mass—swords in front, and the polearms poking between them, and everybody yelling. That's very important. And the flag. I gave my own shirt to make the flag. The front was all cut up by then, but there wasn't a rip in the back—not one. That was the part we took off and used for the flag. Althea sewed the Lung-Rin in it with red thread. Some of them said it would never stand out because there wasn't enough air movement in the building, where most of the fighting was. I told them that if they went forward fast enough it would stand out, and I was right. It was useful in another way too: once or twice we were scattered—I remember one time when the Blues ambushed us—and it showed us where our center was. Nils carried it. I don't know what's happened to it now. It would be nice to have when we get back together.

"I've already told you about that. It couldn't be done: if you were a Yellow, you were a Yellow; a Blue was a Blue, and a Green was a

Green; and nothing anybody could say made any difference. Jan had a Green slave-lover for a while—he even fought with us a couple of times against the Blues. The Greens were finished by then, and he wasn't much good.

"No, as I said, the Greens had a few real fighters. I have no idea what their names were. That was one of the first rules I made—Greens and Blues have no names. If you knew one of them by name before the experiment, you forgot it as quickly as possible. If we had to talk about one particularly, we said: 'the blond Blue woman,' or 'Jan's Green boy.' Like that.

"Another thing that helped us fight was the idea of the Empire. If you talk about a thing like that, it becomes real. Just like the figure we set up. We had the Imperial Guards, and they were brave because if they weren't, they'd lose their places, they wouldn't be guards anymore; and the others fought harder hoping to get in—if someone distinguished himself, or herself, I made them a guard. And if a guard did, I made that guard an officer. And once I had the guards, I used them to keep the rest in order.

"What it was about? The whole experiment? You know—the world. Only so many resources, you see, and so *many* groups of people. I understand some of the other runnings of the experiment came out a little differently; but they wanted to see how *we* worked it out—what our solution was. That's why I don't feel bad about what we did. It was our problem, set to us (if you want to put it that way), and we solved it. When they broke the wall we were organized—everyone knew his place, who he took orders from, and how much he got. How much food, drinking water, bathwater. That was the Empire.

"Mostly we just called it that: 'The Empire.' Officially, we began by calling it Mongolia. Because we were the Yellows. Later we shortened it.

"No, I don't feel bad about her, whoever she was. We were all volunteers, originally, you have to remember. And she kept getting out of line, over and over again, when she was just a stinking Green

or Blue or whatever she was. I can't even remember. So I decided she should be punished. We made a ceremony out of it, with fire in the braziers, and the big gong.

"I had Jan do it. Jan was a colonel. Neal and Ted held her, and Jan put the sword through her belly—so she'd live long enough to know what was happening. When Jan pulled it out, she licked the blood from the blade. The rest of the Greens and Blues would have obeyed after that, believe me.

"Yes, when she finally died. That was when they broke down the wall. They were monitoring a few selected individuals, I suppose, though we didn't know it. She must have been one of them.

"Naturally. I understand how you feel about it now—how the school feels and how the public and the President feel. But do you understand how we felt? You haven't been through what we went through together. We have learned a great many things we will remember, but none of you could possibly know how it was then, when I was Ming the Merciless."

The HORARS *of War*

The three friends in the trench looked very much alike as they labored in the rain. Their hairless skulls were slickly naked to it, their torsos hairless too, and supple with smooth muscles that ran like oil under the wet gleam.

The two, who really were 2909 and 2911, did not mind the jungle around them although they detested the rain that rusted their weapons, and the snakes and insects, and hated the Enemy. But the one called 2910, the real as well as the official leader of the three, did; and that was because 2909 and 2911 had stainless-steel bones; but there was no 2910 and there had never been.

The camp they held was a triangle. In the center, the CP-Aid Station where Lieutenant Kyle and Mr. Brenner slept: a hut of ammo cases packed with dirt whose lower half was dug into the soggy earth. Around it were the mortar pit (NE), the recoilless rifle pit (NW), and Pinocchio's pit (S); and beyond these were the straight lines of the trenches: First Platoon, Second Platoon, Third Platoon (the platoon of the three). Outside of which were the primary wire and an antipersonnel mine field.

And outside that was the jungle. But not completely outside. The jungle set up outposts of its own of swift-sprouting bamboo and elephant grass, and its crawling creatures carried out untiring patrols of the trenches. The jungle sheltered the Enemy, taking him to its great fetid breast to be fed while it sopped up the rain and of it bred its stinging gnats and centipedes.

An ogre beside him, 2911 drove his shovel into the ooze filling the trench, lifted it to shoulder height, dumped it; 2910 did the same thing in his turn, then watched the rain work on the scoop of mud until it was slowly running back into the trench again. Following his eyes 2911 looked at him and grinned. The HORAR's face was broad, hairless, flat-nosed and high-cheeked; his teeth were pointed and white like a big dog's. And he, 2910, knew that that face was his own. Exactly his own. He told himself it was a dream, but he was very tired and could not get out.

Somewhere down the trench the bull voice of 2900 announced the evening meal and the others threw down their tools and jostled past toward the bowls of steaming mash, but the thought of food nauseated 2910 in his fatigue, and he stumbled into the bunker he shared with 2909 and 2911. Flat on his air mattress he could leave the nightmare for a time; return to the sane world of houses and sidewalks, or merely sink into the blessed nothingness that was far better...

Suddenly he was bolt upright on the cot, blackness still in his eyes even while his fingers groped with their own thought for his helmet and weapon. Bugles were blowing from the edge of the jungle, but he had time to run his hand under the inflated pad of the mattress and reassure himself that his hidden notes were safe before 2900 in the trench outside yelled, "Attack! Fall out! Man your firing points!"

It was one of the stock jokes, one of the jokes so stock, in fact, that it had ceased to be anything anyone laughed at, to say "Horar" your firing point (or whatever it was that according to the book should be "manned"). The HORARS in the squad he led used the expression to 2910 just as he used it with them, and when 2900 never employed it the omission had at first unsettled him. But 2900 did not really suspect. 2900 just took his rank seriously.

He got into position just as the mortars put up a parachute flare that hung over the camp like a white rose of fire. Whether because of his brief sleep or the excitement of the impending fight his fatigue had evaporated, leaving him nervously alert but unsteady. From the

jungle a bugle sang, "Ta-taa... taa-taa..." and off to the platoon's left rear the First opened up with their heavy weapons on a suicide squad they apparently thought they saw on the path leading to the northeast gate. He watched, and after half a minute something stood up on the path and grabbed for its midsection before it fell, so there *was* a suicide squad.

Some one, he told himself. *Someone.* Not *something.* Someone grabbed for *his* midsection. They were all human out there.

The First began letting go with personal weapons as well, each deep cough representing a half dozen dartlike flechettes flying in an inescapable pattern three feet broad. "Eyes front, 2910!" barked 2900.

There was nothing to be seen out there but a few clumps of elephant grass. Then the white flare burned out. "They ought to put up another one," 2911 on his right said worriedly.

"A star in the east for men not born of women," said 2910 half to himself, and regretted the blasphemy immediately.

"That's where they need it," 2911 agreed. "The First is having it pretty hot over there. But we could use some light here too."

He was not listening. At home in Chicago, during that inexpressibly remote time which ran from a dim memory of playing on a lawn under the supervision of a smiling giantess to that moment two years ago when he had submitted to surgery to lose every body and facial hair he possessed and undergo certain other minor alterations, he had been unconsciously preparing himself for this. Lifting weights and playing football to develop his body while he whetted his mind on a thousand books; all so that he might tell, making others feel at a remove...

Another flare went up and there were three dark silhouettes sliding from the next-nearest clump of elephant grass to the nearest. He fired his M-19 at them, then heard the HORARS on either side of him fire too. From the sharp corner where their own platoon met the Second a machine gun opened up with tracer. The nearest grass clump sprang into the air and somersaulted amid spurts of earth.

There was a moment of quiet, then five rounds of high explosive

came in right behind them as though aimed for Pinocchio's pit. *Crump. Crump. Crump... Crump. Crump.* (2900 would be running to ask Pinocchio if he were hurt.)

Someone else had been moving down the trench toward them, and he could hear the mumble of the new voice become a gasp when the H.E. rounds came in. Then it resumed, a little louder and consequently a bit more easily understood. "How are you? You feel all right? Hit?"

And most of the HORARS answering, "I'm fine, sir." or "We're okay, sir," but because HORARS did have a sense of humor some of them said things like, "How do we transfer to the Marines, sir?" or "My pulse just registered nine thou', sir. 3000 took it with the mortar sight."

We often think of strength as associated with humorlessness, he had written in the news magazine which had, with the Army's cooperation, planted him by subterfuge of surgery among these *H*omolog *OR*ganisms (*A*rmy *R*eplacement *S*imulations). *But,* he had continued, *this is not actually the case. Humor is a prime defense of the mind, and knowing that to strip the mind of it is to leave it shieldless, the Army and the Synthetic Biology Service have wisely included a charming dash in the makeup of these synthesized replacements for human infantry.*

That had been before he discovered that the Army and the SBS had tried mightily to weed that sense of the ridiculous out, but found that if the HORARS were to maintain the desired intelligence level they could not.

Brenner was behind him now, touching his shoulder. "How are you? Feel all right?"

He wanted to say, "I'm half as scared as you are, you dumb Dutchman," but he knew that if he did the fear would sound in his voice; besides, the disrespect would be unthinkable to a HORAR.

He also wanted to say simply, "A-okay, sir," because if he did Brenner would pass on to 2911 and he would be safe. But he had a reputation for originality to keep up, and he needed that reputation

to cover him when he slipped, as he often did, sidewise of HORAR standards. He answered: "You ought to look in on Pinocchio, sir. I think he's cracking up." From the other end of the squad, 2909's quiet chuckle rewarded him, and Brenner, the man most dangerous to his disguise, continued down the trench....

Fear was necessary because the will to survive was *very* necessary. And a humanoid form was needed if the HORARS were to utilize the mass of human equipment already on hand. Besides, a human-shaped (*homolog?* no, that merely meant *similar, homological*) HORAR had outscored all the fantastic forms SBS had been able to dream up in a super-realistic (public opinion would never have permitted it with human soldiers) test carried out in the Everglades.

(Were they merely duplicating? Had all this been worked out before with some greater war in mind? And had He Himself, the Scientist Himself, come to take the form of His creations to show that He too could bear the unendurable?)

2909 was at his elbow, whispering, "Do you see something, Squad Leader? Over there?" Dawn had come without his noticing.

With fingers clumsy from fatigue he switched the control of his M-19 to the lower, 40mm grenade-launching barrel. The grenade made a brief flash at the spot 2909 had indicated. "No," he said, "I don't see anything now." The fine, soft rain which had been falling all night was getting stronger. The dark clouds seemed to roof the world. (Was he fated to reenact what had been done for mankind? It could happen. The Enemy took humans captive, but there was nothing they would not do to HORAR prisoners. Occasionally patrols found the bodies spread-eagled, with bamboo stakes driven through their limbs; and he could only be taken for a HORAR. He thought of a watercolor of the crucifixion he had seen once. Would the color of his own blood be crimson lake?)

From the CP the observation ornithocopter rose on flapping wings.

"I haven't heard one of the mines go for quite a while," 2909 said.

Then there came the phony-sounding bang that so often during the past few weeks had closed similar probing attacks. Squares of paper were suddenly fluttering all over the camp.

"Propaganda shell," 2909 said unnecessarily, and 2911 climbed casually out of the trench to get a leaflet, then jumped back to his position. "Same as last week," he said, smoothing out the damp rice paper.

Looking over his shoulder, 2910 saw that he was correct. For some reason the Enemy never directed his propaganda at the HORARS, although it was no secret that reading skills were implanted in HORAR minds with the rest of their instinctive training. Instead it was always aimed at the humans in the camp, and played heavily on the distaste they were supposed to feel at being "confined with half-living flesh still stinking of chemicals." Privately, 2910 thought they might have done better, at least with Lieutenant Kyle, to have dropped that approach and played up sex. He also got the impression from the propaganda that the Enemy thought there were far more humans in the camp than there actually were.

Well, the Army—with far better opportunities to know—was wrong as well. With a few key generals excepted, the Army thought there were only two....

He had made the All-American. How long ago it seemed. No coach, no sportswriter had ever compared his stocky, muscular physique with a HORAR's. And he had majored in journalism, had been ambitious. How many men, with a little surgical help, could have passed here?

"Think it sees anything?" he heard 2911 ask 2909. They were looking upward at the "bird" sailing overhead.

The ornithocopter could do everything a real bird could except lay eggs. It could literally land on a strand of wire. It could ride thermals like a vulture, and dive like a hawk. And the bird-motion of its wings was wonderfully efficient, saving power-plant weight that could be used for zoom-lenses and telecameras. He wished he were in the CP watching the monitor screen with Lieutenant Kyle instead of standing with his face a scant foot above the mud (they had tried stalked eyes

like a crab's in the Everglades, he remembered, but the stalks had become infected by a fungus...).

As though in answer to his wish, 2900 called, "Show some snap for once, 2910. He says He wants us in the CP."

When he himself thought *He, He* meant God; but 2900 meant Lieutenant Kyle. That was why 2900 was a platoon leader, no doubt; that and the irrational prestige of a round number. He climbed out of the trench and followed him to the CP. They needed a communicating trench, but that was something there hadn't been time for yet.

Brenner had someone (2788? looked like him, but he couldn't be certain) down on his table. Shrapnel, probably from a grenade. Brenner did not look up as they came in, but 2910 could see his face was still white with fear although the attack had been over for a full quarter of an hour. He and 2900 ignored the SBS man and saluted Lieutenant Kyle.

The company commander smiled. "Stand at ease, HORARS. Have any trouble in your sector?"

2900 said, "No, sir. The light machine gun got one group of three and 2910 here knocked off a group of two. Not much of an attack on our front, sir."

Lieutenant Kyle nodded. "I thought your platoon had the easiest time of it, 2900, and that's why I've picked you to run a patrol for me this morning."

"That's fine with us, sir."

"You'll have Pinocchio, and I thought you'd want to go yourself and take 2910's gang."

He glanced at 2910. "Your squad still at full strength?"

2910 said, "Yes, sir," making an effort to keep his face impassive. He wanted to say: I shouldn't have to go on patrol. I'm human as you are, Kyle, and patrolling is for things grown in tubes, things fleshed out around metal skeletons, things with no family and no childhood behind them.

Things like my friends.

He added, "We've been the luckiest squad in the company, sir."

"Fine. Let's hope your luck holds, 2910." Kyle's attention switched back to 2900. "I've gotten under the leaf canopy with the ornithocopter and done everything except make it walk around like a chicken. I can't find a thing and it's drawn no fire, so you ought to be okay. You'll make a complete circuit of the camp without getting out of range of mortar support. Understand?"

2900 and 2910 saluted, about-faced, and marched out. 2910 could feel the pulse in his neck; he flexed and unflexed his hands unobtrusively as he walked. 2900 asked, "Think we'll catch any of them?" It was an unbending for him—the easy camaraderie of anticipated action.

"I'd say so. I don't think the CO's had long enough with the bird to make certain of anything except that their main force has pulled out of range. I hope so."

And that's the truth, he thought. Because a good hot firefight would probably do it—round the whole thing out so I can get out of here.

Every two weeks a helicopter brought supplies and, when they were needed, replacements. Each trip it also carried a correspondent whose supposed duty was to interview the commanders of the camps the copter visited. The reporter's name was Keith Thomas, and for the past two months he had been the only human being with whom 2910 could take off his mask.

Thomas carried scribbled pages from the notebook under 2910's air mattress when he left, and each time he came managed to find some corner in which they could speak in private for a few seconds. 2910 read his mail then and gave it back. It embarrassed him to realize that the older reporter viewed him with something not far removed from hero worship.

I can get out of here, he repeated to himself. Write it up and tell Keith we're ready to use the letter.

2900 ordered crisply, "Fall in your squad. I'll get Pinocchio and meet you at the south gate."

"Right." He was suddenly seized with a desire to tell someone, even 2900, about the letter. Keith Thomas had it, and it was really only an undated note, but it was signed by a famous general at Corps Headquarters. Without explanation it directed that number 2910 be detached from his present assignment and placed under the temporary orders of Mr. K. Thomas, Accredited Correspondent. And Keith would use it any time he asked him to. In fact, he had wanted to on his last trip.

He could not remember giving the order, but the squad was falling in, lining up in the rain for his inspection almost as smartly as they had on the drill field back at the crêche. He gave "At Ease" and looked them over while he outlined the objectives of the patrol. As always, their weapons were immaculate despite the dampness, their massive bodies ramrod-straight, their uniforms as clean as conditions permitted.

The L.A. Rams with guns, he thought proudly. Barking "On Phones," he flipped the switch on his helmet that would permit 2900 to knit him and the squad together with Pinocchio in a unified tactical unit. Another order and the HORARS deployed around Pinocchio with the smoothness of repeated drill, the wire closing the south gate was drawn back, and the patrol moved out.

With his turret retracted, Pinocchio the robot tank stood just three feet high, and he was no wider than an automobile; but he was as long as three, so that from a distance he had something of the look of a railroad flatcar. In the jungle his narrow front enabled him to slip between the trunks of the unconquerable giant hardwoods, and the power in his treads could flatten saplings and bamboo. Yet resilient organics and sintered metals had turned the rumble of the old, manned tanks to a soft hiss for Pinocchio. Where the jungle was free of undergrowth he moved as silently as a hospital cart.

His immediate precursor had been named "Punch," apparently in the sort of simpering depreciation which found "Shillelagh" acceptable for a war rocket. "Punch"—a bust in the mouth.

But Punch, which like Pinocchio had possessed a computer brain

and no need of a crew (or for that matter room for one except for an exposed vestigial seat on his deck), had required wires to communicate with the infantry around him. Radio had been tried, but the problems posed by static, jamming, and outright enemy forgery of instructions had been too much for Punch.

Then an improved model had done away with those wires and some imaginative officer had remembered that "Mr. Punch" had been a knockabout marionette—and the wireless improvement was suddenly very easy to name. But, like Punch and its fairy-tale namesake, it was vulnerable if it went out into the world alone.

A brave man (and the Enemy had many) could hide himself until Pinocchio was within touching distance. And a well-instructed one could then place a hand grenade or a bottle of gasoline where it would destroy him. Pinocchio's three-inch-thick armor needed the protection of flesh, and since he cost as much as a small city and could (if properly protected) fight a regiment to a stand, he got it.

Two scouts from 2910's squad preceded him through the jungle, forming the point of the diamond. Flankers moved on either side of him "beating the bush" and, when it seemed advisable, firing a pattern of flechettes into any suspicious-looking piece of undergrowth. Cheerful, reliable 2909, the assistant squad leader, with one other HORAR formed the rear guard. As patrol leader 2900's position was behind Pinocchio, and as squad leader 2910's was in front.

The jungle was quiet with an eerie stillness, and it was dark under the big trees. "Though I walk in the valley of the shadow..."

Made tiny by the phones, 2900 squeaked in his ear, "Keep the left flankers farther out!" 2910 acknowledged and trotted over to put his own stamp on the correction, although the flankers, 2913, 2914, and 2915, had already heard it and were moving to obey. There was almost no chance of trouble this soon, but that was no excuse for a slovenly formation. As he squeezed between two trees something caught his eye and he halted for a moment to examine it. It was a

skull; a skull of bone rather than a smooth HORAR skull of steel, and so probably an Enemy's.

A big "E" Enemy's, he thought to himself. A man to whom the normal HORAR conditioning of exaggerated respect bordering on worship did not apply.

Tiny and tinny, "Something holding you up, 2910?"

"Be right there." He tossed the skull aside. A man whom even a HORAR could disobey; a man even a HORAR could kill. The skull had looked old, but it could not have been old. The ants would have picked it clean in a few days, and in a few weeks it would rot. But it was probably at least seventeen or eighteen years old.

The ornithocopter passed them on flapping wings, flying its own search pattern. The patrol went on.

Casually 2910 asked his helmet mike, "How far are we going? Far as the creek?"

2900's voice squeaked, "We'll work our way down the bank a quarter mile, then cut west," then with noticeable sarcasm added, "if that's okay with you?"

Unexpectedly Lieutenant Kyle's voice came over the phones. "2910's your second in command, 2900. He has a duty to keep himself informed of your plans."

But 2910, realizing that a real HORAR would not have asked the question, suddenly also realized that he knew more about HORARS than the company commander did. It was not surprising, he ate and slept with them in a way Kyle could not, but it was disquieting. He probably knew more than Brenner, strict biological mechanics excepted, as well.

The scouts had reported that they could see the sluggish jungle stream they called the creek when Lieutenant Kyle's voice came over the phones again. As routinely as he had delivered his mild rebuke to 2900 he announced, "Situation Red here. An apparent battalion-level attack hitting the North Point. Let's suck it back in, patrol."

Pinocchio swiveled 180 degrees by locking his right tread, and the squad turned in a clockwise circle around him. Kyle said distantly,

"The recoillesses don't seem to have found the range yet, so I'm going out to give them a hand. Mr. Brenner will be holding down the radio for the next few minutes."

2900 transmitted, "We're on our way, sir."

Then 2910 saw a burst of automatic weapons fire cut his scouts down. In an instant the jungle was a pandemonium of sound.

Pinocchio's radar had traced the bullets back to their source and his main armament slammed a 155mm shell at it, but crossfire was suddenly slicing in from all around them. The bullets striking Pinocchio's turret screamed away like damned souls. 2910 saw grenades arc out of nowhere and something struck his thigh with terrible force. He made himself say, "I'm hit, 2909; take the squad," before he looked at it. Mortar shells were dropping in now and if his assistant acknowledged, he did not hear.

A bit of jagged metal from a grenade or a mortar round had laid the thigh open, but apparently missed the big artery supplying the lower leg. There was no spurt, only a rapid welling of blood, and shock still held the injury numb. Forcing himself, he pulled apart the lips of the wound to make sure it was clear of foreign matter. It was very deep but the bone was not broken; at least so it seemed.

Keeping as low as he could, he used his trench knife to cut away the cloth of his trousers leg, then rigged a tourniquet with his belt. His aid packet contained a pad of gauze, and tape to hold it in place. When he had finished he lay still, holding his M-19 and looking for a spot where its fire might do some good. Pinocchio was firing his turret machine gun in routine bursts, sanitizing likely-looking patches of jungle; otherwise the fight seemed to have quieted down.

2900's voice in his ear called, "Wounded? We got any wounded?"

He managed to say, "Me. 2910." A HORAR would feel some pain, but not nearly as much as a man. He would have to fake the insensitivity as best he could. Suddenly it occurred to him that he would be invalided out, would not have to use the letter, and he was glad.

"We thought you bought it, 2910. Glad you're still around."

Then Brenner's voice cutting through the transmission jumpy

with panic: "We're being overrun here! Get the Pinocchio back at once."

In spite of his pain 2910 felt contempt. Only Brenner would say "*the* Pinocchio." 2900 sent, "Coming, sir," and unexpectedly was standing over him, lifting him up.

He tried to look around for the squad. "We lose many?"

"Four dead and you." Perhaps no other human would have detected the pain in 2900's harsh voice. "You can't walk with that, can you?"

"I couldn't keep up."

"You ride Pinocchio then." With surprising gentleness the platoon leader lifted him into the little seat the robot tank's director used when road speeds made running impractical. What was left of the squad formed a skirmish line ahead. As they began to trot forward he could hear 2900 calling, "Base camp! Base camp! What's your situation there, sir?"

"Lieutenant Kyle's dead," Brenner's voice came back. "3003 just came in and told me Kyle's dead!"

"Are you holding?"

"I don't know." More faintly 2910 could hear him asking, "Are they holding, 3003?"

"Use the periscope, sir. Or if it still works, the bird."

Brenner chattered, "I don't know if we're holding or not. 3003 was hit and now he's dead. I don't think he knew anyway. You've got to hurry."

It was contrary to regulations, but 2910 flipped off his helmet phone to avoid hearing 2900's patient reply. With Brenner no longer gibbering in his ears he could hear not too distantly the sound of explosions which must be coming from the camp. Small-arms fire made an almost incessant buzz as a background for the whizz—bang! of incoming shells and the coughing of the camp's own mortars.

Then the jungle was past and the camp lay in front of them. Geysers of mud seemed to be erupting from it everywhere. The squad

broke into a full run, and even while he rolled, Pinocchio was firing his 155 in support of the camp.

They faked us out, 2910 reflected. His leg throbbed painfully but distantly and he felt light-headed and dizzy—as though he were an ornithocopter hovering in the misty rain over his own body. With the light-headedness came a strange clarity of mind.

They faked us out. They got us used to little probes that pulled off at sunrise, and then when we sent Pinocchio out they were going to ambush us and take the camp. It suddenly occurred to him that he might find himself still on this exposed seat in the middle of the battle; they were already approaching the edge of the mine field, and the HORARS ahead were moving into squad column so as not to overlap the edges of the cleared lane. "Where are we going, Pinocchio?" he asked, then realized his phone was still off. He reactivated it and repeated the question.

Pinocchio droned, "Injured HORAR personnel will be delivered to the Command Post for Synthetic Biology Service attention," but 2910 was no longer listening. In front of them he could hear what sounded like fifty bugles signaling for another Enemy attack.

The south side of the triangular camp was deserted, as though the remainder of their platoon had been called away to reinforce the First and Second; but with the sweeping illogic of war there was no Enemy where they might have entered unresisted.

"Request assistance from Synthetic Biology Service for injured HORAR personnel," Pinocchio was saying. Talking did not interfere with his firing the 155, but when Brenner did not come out after a minute or more, 2910 managed to swing himself down, catching his weight on his good leg. Pinocchio rolled away at once.

The CP bunker was twisted out of shape, and he could see where several near-misses had come close to knocking it out completely. Brenner's white face appeared in the doorway as he was about to go in. "Who's that?"

"2910. I've been hit—let me come in and lie down."

"They won't send us an air strike. I radioed for one and they say this whole part of the country's socked in; they say they wouldn't be able to find us."

"Get out of the door. I'm hit and I want to come in and lie down." At the last moment he remembered to add, "Sir."

Brenner moved reluctantly aside. It was dim in the bunker but not dark.

"You want me to look at that leg?"

2910 had found an empty stretcher, and he laid himself on it, moving awkwardly to keep from flexing his wound. "You don't have to," he said. "Look after some of the others." It wouldn't do for Brenner to begin poking around. Even rattled as he was he might notice something.

The SBS man went back to his radio instead. His frantic voice sounded remote and faint. It was ecstasy to lie down.

At some vast distance, voices were succeeding voices, argument meeting argument, far off. He wondered where he was.

Then he heard the guns and knew. He tried to roll onto his side and at the second attempt managed to do it, although the light-headedness was worse than ever. 2893 was lying on the stretcher next to him, and 2893 was dead.

At the other end of the room, the end that was technically the CP, he could hear Brenner talking to 2900. "If there were a chance," Brenner was saying, "you know I'd do it, Platoon Leader."

"What's happening?" he asked. "What's the matter?" He was too dazed to keep up the HORAR role well, but neither of them noticed.

"It's a division," Brenner said. "A whole Enemy division. We can't hold off that kind of force."

He raised himself on his elbow. "What do you mean?"

"I talked to them...I raised them on the radio, and it's a whole division. They got one of their officers who could speak English to talk to me. They want us to surrender."

"*They* say it's a division, sir," 2900 put in evenly.

2910 shook his head, trying to clear it. "Even if it were, with Pinocchio..."

"The Pinocchio's gone."

2900 said soberly, "We tried to counterattack, 2910, and they knocked Pinocchio out and threw us back. How are you feeling?"

"They've got at least a division," Brenner repeated stubbornly.

2910's mind was racing now, but it was as though it were running endless wind sprints on a treadmill. If Brenner were going to give up, 2900 would never even consider disobeying, no matter how much he might disagree. There were various ways, though, in which he could convince Brenner he was a human being—given time. And Brenner could, Brenner would, tell the Enemy, so that he too would be saved. Eventually the war would be over and he could go home. No one would blame him. If Brenner were going—

Brenner was asking, "How many effectives left?"

"Less than forty, sir." There was nothing in 2900's tone to indicate that a surrender meant certain death to him, but it was true. The Enemy took only human prisoners. (Could 2900 be convinced? Could he make any of the HORARS understand, when they had eaten and joked with him, knew no physiology, and thought all men not Enemy demigods? Would they believe him if he were to try to take command?)

He could see Brenner gnawing at his lower lip. "I'm going to surrender," the SBS man said at last. A big one, mortar or bombardment rocket, exploded near the CP, but he appeared not to notice it. There was a wondering, hesitant note in his voice—as though he were still trying to accustom himself to the idea.

"Sir—" 2900 began.

"I forbid you to question my orders." The SBS man sounded firmer now. "But I'll ask them to make an exception this time, Platoon Leader. Not to do," his voice faltered slightly, "what they usually do to nonhumans."

"It's not that," 2900 said stolidly. "It's the folding up. We don't mind dying, sir, but we want to die fighting."

One of the wounded moaned, and 2910 wondered for a moment if he, like himself, had been listening.

Brenner's self-control snapped. "You'll die any damn way I tell you!"

"Wait." It was suddenly difficult for 2910 to talk, but he managed to get their attention. "2900, Mr. Brenner hasn't actually ordered you to surrender yet, and you're needed on the line. Go now and let me talk to him." He saw the HORAR leader hesitate and added, "He can reach you on your helmet phone if he wants to; but go now and fight."

With a jerky motion 2900 turned and ducked out the narrow bunker door. Brenner, taken by surprise, said, "What is it, 2910? What's gotten into you?"

He tried to rise, but he was too weak. "Come here, Mr. Brenner," he said. When the SBS man did not move he added, "I know a way out."

"Through the jungle?" Brenner scoffed in his shaken voice. "That's absurd." But he came. He leaned over the stretcher, and before he could catch his balance 2910 had pulled him down.

"What are you doing?"

"Can't you tell? That's the point of my trench knife you feel on your neck."

Brenner tried to struggle, then subsided when the pressure of the knife became too great. "You—can't—do this."

"I can. Because I'm not a HORAR. I'm a man, Brenner, and it's very important for you to understand that." He felt rather than saw the look of incredulity on Brenner's face. "I'm a reporter, and two years ago when the Simulations in this group were ready for activation I was planted among them. I trained with them and now I've fought with them, and if you've been reading the right magazine you must have seen some of the stories I've filed. And since you're a civilian too, with no more right to command than I have, I'm taking charge." He could sense Brenner's swallow.

"Those stories were frauds—it's a trick to gain public acceptance

of the HORARS. Even back in Washington everybody in SBS knows about them."

The chuckle hurt, but 2910 chuckled. "Then why've I got this knife at your neck, Mr. Brenner?"

The SBS man was shaking. "Don't you see how it was, 2910? No human could live as a HORAR does, running miles without tiring and only sleeping a couple of hours a night, so we did the next best thing. Believe me, I was briefed on it all when I was assigned to this camp; I know all about you, 2910."

"What do you mean?"

"Damn it, let me go. You're a HORAR, and you can't treat a human like this." He winced as the knife pressed cruelly against his throat, then blurted, "They couldn't make a reporter a HORAR, so they *took* a HORAR. They took you, 2910, and made you a reporter. They implanted all the memories of an actual man in your mind at the same time they ran the regular instinct tapes. They gave you a soul, if you like, but you are a HORAR."

"They must have thought that up as a cover for me, Brenner. That's what they told you so you wouldn't report it or try to deactivate me when I acted unlike the others. I'm a man."

"You couldn't be."

"I'm telling you—"

"People are tougher than you think, Brenner; you've never tried."

"Take the bandage off my leg."

"What?"

He pressed again with the point of the knife. "The bandage. Take it off."

When it was off he directed, "Now spread the lips of the wound." With shaking fingers Brenner did so. "You see the bone? Go deeper if you have to. What is it?"

Brenner twisted his neck to look at him directly, his eyes rolling. "It's stainless steel."

2910 looked then and saw the bright metal at the bottom of the

cleft of bleeding flesh; the knife slid into Brenner's throat without resistance, almost as though it moved itself. He wiped the blade on Brenner's dead arm before he sheathed it.

Ten minutes later when 2900 returned to the CP he said nothing; but 2910 saw his eyes and knew that 2900 knew. From his stretcher he said, "You're in full command now."

2900 glanced again at Brenner's body. A second later he said slowly, "He was a sort of Enemy, wasn't he? Because he wanted to surrender, and Lieutenant Kyle would never have done that."

"Yes, he was."

"But I couldn't think of it that way while he was alive." 2900 looked at him thoughtfully. "You know, you have something, 2910. A spark. Something the rest of us lack." For a moment he fingered his chin with one huge hand. "That's why I made you a squad leader; that and to get you out of some work, because sometimes you couldn't seem to keep up. But you've that spark, somehow."

2910 said, "I know. How is it out there?"

"We're still holding. How do you feel?"

"Dizzy. There's a sort of black stuff all around the sides when I see. Listen, will you tell me something, if you can, before you go?"

"Of course."

"If a human's leg is broken very badly, what I believe they call a compound spiral fracture, is it possible for the human doctors to take out a section of the bone and replace it with a metal substitute?"

"I don't know," 2900 answered. "What does it matter?"

Vaguely 2910 said, "I think I knew of a football player once they did that to. At least, I seem now to remember it...I had forgotten for a moment."

Outside the bugles were blowing again.

Near him the dying HORAR moaned.

An American news magazine sometimes carries, just inside its front cover among the advertisements, a column devoted to news of its

own people. Two weeks after a correspondent named Thomas filed the last article of a series which had attracted national and even international attention, the following item appeared there:

> The death of a staffer in war is no unique occurrence in the history of this publication, but there is a particular poignancy about that of the young man whose stories, paradoxically, to conceal his number have been signed only with his name (*see* PRESS). The airborne relief force, which arrived too late to save the camp at which he had resigned his humanity to work and fight, reports that he apparently died assisting the assigned SBS specialist in caring for the creatures whose lot he had, as nearly as a human can, made his own. Both he and the specialist were bayonetted when the camp was overrun.

A Criminal Proceeding

Two days before Easter Sunday, at eleven forty-three PM, Stephen Brodie's apartment door was broken down by a mixed force, comprised of elements from the New York and Philadelphia police departments, the Secret Service, the Federal Bureau of Investigation, the Bureau of Narcotics, CBS, ABC, and the *Washington Post.* Brodie's trial began approximately six months later, on November seventh.

Perhaps because his was the first arrest to have been carried live on nation-wide television, public interest from the very beginning far exceeded anything known before. On the fifth, a late show host mentioned a rumor to the effect that the trial would begin in secret a day earlier than had been originally announced. Although he had quoted the report only to ridicule it, what he said proved sufficient to fill the street outside the Criminal Courts Building with a mob estimated by the police to contain eighty-four thousand persons, including many women and children.

On the seventeenth, the selection of the jury began. Both the Prosecutor's Office and Brodie's attorneys were to have up to three hundred dismissals without cause, and an unlimited number of dismissals for cause. The jury—twelve jurors and fifteen alternates—would be chosen from a panel of five thousand persons. Since the names of all these were known to the public well in advance, it was inevitable that certain favorites should emerge, based upon previous familiarity, relationship to already well-known persons, appearance,

or membership in a popular or notorious group. *Time* and *Newsweek* published their ideal rolls of twenty-seven as early as June, and the NBC computer, fresh from a triumph in the prediction of a presidential election, presented its own list of the fifty "most likely"—a list that in the event proved surprisingly inaccurate.

The seventeenth was a Monday, and selection continued until the following Thursday without a juror being accepted, and, indeed, without any popular favorite coming under consideration. At three-fourteen tension was mounting—H. Piper Davis, a building contractor whose remark that "Guilt or whatever would have to be determined by the law," made some four months previously, had caught the attention of the media, was a mere two names off. At this moment, the selection of Emma Munson, a previously unnoticed black Baptist mother's helper, struck the courtroom like a meteor. "No objection," stated K. B. Parker, the assistant prosecutor. When Will (Scooter) Clark, the defense attorney, said—in place of the universally anticipated "objection for cause"—"No objection," only the Public Broadcasting System was not caught flatfooted. The fortunate three hundred thousand (continental U.S.) watching their coverage were treated to an instant replay with no more than a scarcely perceptible pause for tape editing.

After Munson's appointment, the remaining twenty-six jurors were decided upon relatively rapidly. Many observers felt, however, that this quick process represented a covert agreement between counsel to avoid insofar as possible further demonstrations like the January twelfth (through twenty-seventh) riots in San Francisco. The appointment of Charles Hop Sing as the third regular juror was widely considered to have been an unacknowledged surrender to demands of the male-grocer-oriental-American community; and renewed violence among the Garment Workers, culminating in the Third Avenue brassiere march of February eleventh, helped fan a feeling of national urgency.

By March sixteenth, the selection of the jury was complete; the presiding justice, Frederick K. C. McGrail, ordered a week's recess

during which the domed Bronco Stadium Complex was to be equipped with additional television cameras, dressing rooms, permanent Mace distribution piping, a revolving stage, provision for the introduction of horses and (if necessary) elephants, means of flooding the center section to Row AAC, armored mechanical police (controlled from the gondola that also housed the transmitters required for a panoramic view of the court, and operated by a committee including representatives of the five major networks, the Senate of the United States, and the University of Chicago), a small dirigible to supplement the gondola, an aviary for carrier pigeons, three IBM 380 computers, recording equipment, cooking facilities to supplement the seven restaurants that formed a permanent part of the sports complex, a weather station, and black artificial grass surrounding a *stauros.*

On May third of the following year, the arena was prepared, and the trial proper began. During the intervening thirteen months, however, competition for the fuchsia and gold passes that would admit the bearer had become almost unendurably intense. Twenty-four thousand seven hundred had been distributed to Broncos stockholders in full payment for the use of the stadium for as long as required. Another three hundred compensated the players themselves (both platoons) for up to six missed seasons. Allowing ample space for the jury, witnesses, attorneys, and press, left another three hundred and thirty-six thousand, seven hundred and eighty-one seats. Upon the President's request, thirteen thousand of these were awarded to the White House staff, both Houses of Congress, the current graduating classes of the four service academies, and the legislature of the Commonwealth of Delaware (her native state). The competition for the remaining passes was almost beyond comprehension; counterfeiting was unquestionably responsible for a substantial part of the difficulties that were to plague admissions policies throughout the case.

Court was to convene at eleven, but the seating riots and the counter-violence espoused by the New Venue Rangers, a catch-as-

catch-can't coalition of Broncos fans, private security force officials, and Mothers' Clubs, delayed the first rap of the gavel until one fifty-eight.

The opening motion was made by Brodie's attorney, who requested a new trial, alleging certain irregularities in the selection of the jury. Court was recessed to consider the motion, reconvening on May thirty-first, when Justice Hopkins denied it "at this time." Following the luncheon recess, Deputy Prosecutor Eli Braincreek began the government's case. Many seasoned critics noted that during the entire presentation, which continued until June twenty-fifth, the ABC camera was fastened unwaveringly upon the countenance of Stephen Brodie, the defendant. Editorials in the *Toledo Blade* and the *Houston Post* speculated that this fixed regard was a strategy compounded with the network by Brodie's lawyers. (Brodie was reputed to have been a steadfast partisan of certain ABC presentations when free, notably the "Monday Night Movie.") An aging but still boyish commentator quipped that ABC had suffered a jammed swivel (on June thirteenth, NBC's only reference to the affair), and another rival pointed out that since CBS's cameras provided two views of Brodie (full face and three-quarter) CBS's viewers actually saw more of him than ABC's did. (This employment of the word *more* was challenged by the journalism review of the same name.)

Whether ABC's concentrated coverage was justified or not, it made apparent, as no other scrutiny did, the increasing tension to which Brodie was subjected. When Braincreek referred for the first time to the private yacht chartered by Antropopos and armed by him with heat-seeking underwater projectiles, Brodie was observed to wince visibly; and by the twentieth of June, when Ethel B. Saltzlust devoted four hours to the broken aquarium upon which Brodie was alleged to have cut his foot while skydiving, some thirty million persons observed the hesitating and even tremulous manner in which he extended his hand toward Ella Moneypenny-Hubert, the purported mother of his seven adopted Viet Nam war-orphan heirs.

During September, attention left the trial to center on the

Congressional debate over the Perkins-O'Farrell Act, a bill that, when passed (as it was the following month), would require a retroactive mandatory death penalty for Charges Thirteen, Fifteen, Twenty-One, and Twenty-seven in the indictment. It was widely believed that the President would veto this bill; but late in the afternoon of October thirty-first she signed it at her seat in the stadium, the seventeen simulacra of herself imported from Disneyworld-Havana to deceive snipers acting in concert. That night Brodie attempted suicide in his cell, knotting a strip torn from his shirt around his neck and the bars in his door, and jumping from his bunk after slashing his wrists with fragments of his artificial eye (injuries eerily reminiscent of those inflicted three years previously when he had been attacked by a demonic model aircraft—a Second World War B-17—allegedly under the control of Hess DeLobel). Over a quarter of a million persons volunteered to give blood, most, apparently, under the illusion that the donation would involve an artery-to-artery meeting with Brodie. (The actual transfusions came from a turnkey, Raymond R. Swain; Swain was assassinated the following year.)

Two weeks before Christmas, Arnone Harper, acting for the prosecution, called to the stand the first of the persons alleged to have been employed for illicit purposes by Brodie and others. The witness, Melinda Bettis, known professionally as "Fayette City Red," made a strong impression on the spectators. Her appearance was followed by those of Wanda Wood, JoAnne Blake, Eve Smythe ("Nova Demure"), Everett H. White ("Carol Clark"), and Sonya Plum Blossom; Ms. Plum Blossom testified that both the Secretary of Defense and the Secretary-General of the United Nations had been present at the party given on board the guided-missile carrier *Mayaguez Incident* during the special elections. (Later confirmed by the General Assembly, though denied by the Security Council.) Several witnesses stated that Brodie and others had hoped to gain world-wide control, both monetary and military, on or before the occasion of the USSA debacle; and Elizabeth Cushy, a witness

whose shapely legs, slender waist, and voluptuous decolletage earned her the highest ratings achieved to that date by any prosecution presentation, stated under oath that Brodie had told her in confidence that had the judge not intervened, he had planned (it being the previous year) to pack the courtroom with persons attached by oath, as well as by bonds of gratitude, to himself and to Giznik. Following this testimony, Justice Russell ordered the court cleared. This required a ten-day recess, during which seventeen thousand persons (*New Yorker* estimate) were injured, and a mausoleum belonging to Scholla was appropriated by a thief who used its flamethrowers to clear a path through the Seventh Marines and down Pennsylvania Avenue. The mausoleum was to have been the prosecution's Exhibit C.

On January twenty-fifth the trial reopened, but it closed again almost at once when a bomb exploded under the press gallery during the mid-day recess. A different kind of bombshell struck the court on February fourteenth, when Caleb Cohen III, acting for Brodie, announced that his client was entering a Guilty plea to Charges Eight, Sixteen, Seventeen, and Forty-Seven, and altering his plea of Not Guilty—insofar as it applied to Twenty-One, Twenty-Nine, Thirty, and Forty-Two—to Not Guilty by Reason of Insanity. All these changes of plea were refused "in the public interest," and on February tenth, Brodie attempted suicide a second time.

By mid-March the prosecution's case was practically complete. The chiefs of state of the United States and five foreign governments (East Germany, West Germany, Iran, Sweden, and Morocco) had appeared to testify against Brodie; so had eighteen well-known television personalities. Over three hundred hours of tape had been played. The famous "sly spy films" had been shown to the jury twice and supplemented with stills showing Brodie looking toward the stars (Cassiopeia); Brodie with his right arm around the shoulders of his (then) wife, Angella Brodie Yuppe; Brodie marching to protest the pollution of the Windward Passage; Brodie playing chess in a store window with an old man (Stanislas Henryk Chvojka, black,

won in twenty-eight moves); and Brodie picking apples in a "pick your own for three dollars a bushel" deal at *Apple City*.

The prosecution's summing-up lasted less than a week, and on March twenty-fourth Brodie took the stand in his own defense and, in a surprise move, left it almost at once to thrust his arm into the divine fire, then burning on a table before the jury, where it was the prosecution's Exhibit K. With his hand in the flame, Brodie swore his innocence. On the news that night, NBC, CBS, and ABC reported that the Mosque of Omar had collapsed during an earthquake, the last wall of the Temple of Solomon had fallen, and a voice had been heard crying "Pan is reborn!" near the Isles of Paxi. Within three weeks Brodie had a reported five hundred thousand disciples, most of them sworn to abstain from the use of genital sprays as well as from the eating of any kind of meat. I believe it is safe to say that all of us felt then that the real prosecution had not yet begun.

The Detective of Dreams

I was writing in my office in the rue Madeleine when Andrée, my secretary, announced the arrival of Herr D___. I rose, put away my correspondence, and offered him my hand. He was, I should say, just short of fifty, had the high, clear complexion characteristic of those who in youth (now unhappily past for both of us) have found more pleasure in the company of horses and dogs and the excitement of the chase than in the bottles and bordels of city life, and wore a beard and mustache of the style popularized by the late emperor. Accepting my invitation to a chair, he showed me his papers.

"You see," he said, "I am accustomed to acting as the representative of my government. In this matter I hold no such position, and it is possible that I feel a trifle lost."

"Many people who come here feel lost," I said. "But it is my boast that I find most of them again. Your problem, I take it, is purely a private matter?"

"Not at all. It is a public matter in the truest sense of the words."

"Yet none of the documents before me—admirably stamped, sealed, and beribboned though they are—indicates that you are other than a private gentleman traveling abroad. And you say you do not represent your government. What am I to think? What is this matter?"

"I act in the public interest," Herr D___ told me. "My fortune is not great, but I can assure you that in the event of your success you will be well recompensed; although you are to take it that I

alone am your principal, yet there are substantial resources available to me."

"Perhaps it would be best if you described the problem to me?"

"You are not averse to travel?"

"No."

"Very well then," he said, and so saying launched into one of the most astonishing relations—no, *the* most astonishing relation—I have ever been privileged to hear. Even I, who had at first hand the account of the man who found Paulette Renan with the quince seed still lodged in her throat; who had received Captain Brotte's testimony concerning his finds amid the antarctic ice; who had heard the history of the woman called Joan O'Neil, who lived for two years behind a painting of herself in the Louvre, from her own lips—even I sat like a child while this man spoke.

When he fell silent, I said, "Herr D___, after all you have told me, I would accept this mission though there were not a *sou* to be made from it. Perhaps once in a lifetime one comes across a case that must be pursued for its own sake; I think I have found mine."

He leaned forward and grasped my hand with a warmth of feeling that was, I believe, very foreign to his usual nature. "Find and destroy the Dream-Master," he said, "and you shall sit upon a chair of gold, if that is your wish, and eat from a table of gold as well. When will you come to our country?"

"Tomorrrow morning," I said. "There are one or two arrangements I must make here before I go."

"I am returning tonight. You may call upon me at any time, and I will apprise you of new developments." He handed me a card. "I am always to be found at this address—if not I, then one who is to be trusted, acting in my behalf."

"I understand."

"This should be sufficient for your initial expenses. You may call on me should you require more." The cheque he gave me as he turned to leave represented a comfortable fortune.

I waited until he was nearly out the door before saying, "I thank

you, Herr Baron." To his credit, he did not turn; but I had the satisfaction of seeing a flush red rising above the precise white line of his collar before the door closed.

Andrée entered as soon as he had left. "Who was that man? When you spoke to him—just as he was stepping out of your office—he looked as if you had struck him with a whip."

"He will recover," I told her. "He is the Baron H___, of the secret police of K___. D___ was his mother's name. He assumed that because his own desk is a few hundred kilometers from mine, and because he does not permit his likeness to appear in the daily papers, I would not know him; but it was necessary, both for the sake of his opinion of me and my own of myself, that he should discover that I am not so easily deceived. When he recovers from his initial irritation, he will retire tonight with greater confidence in the abilities I will devote to the mission he has entrusted to me."

"It is typical of you, monsieur," Andrée said kindly, "that you are concerned that your clients sleep well."

Her pretty cheek tempted me, and I pinched it. "I am concerned," I replied; "but the Baron will not sleep well."

My train roared out of Paris through meadows sweet with wild flowers, to penetrate mountain passes in which the danger of avalanches was only just past. The glitter of rushing water, sprung from on high, was everywhere; and when the express slowed to climb a grade, the song of water was everywhere, too, water running and shouting down the gray rocks of the Alps. I fell asleep that night with the descant of that icy purity sounding through the plainsong of the rails, and I woke in the station of I___, the old capital of J___, now a province of K___.

I engaged a porter to convey my trunk to the hotel where I had made reservations by telegraph the day before, and amused myself for a few hours by strolling about the city. Here I found the Middle Ages might almost be said to have remained rather than lingered. The city wall was complete on three sides, with its merloned towers in repair;

and the cobbled streets surely dated from a period when wheeled traffic of any kind was scarce. As for the buildings—Puss in Boots and his friends must have loved them dearly: there were bulging walls and little panes of bull's-eye glass, and overhanging upper floors one above another until the structures seemed unbalanced as tops. Upon one grey old pile with narrow windows and massive doors, I found a plaque informing me that though it had been first built as a church, it had been successively a prison, a customhouse, a private home, and a school. I investigated further, and discovered it was now an arcade, having been divided, I should think at about the time of the first Louis, into a multitude of dank little stalls. Since it was, as it happened, one of the addresses mentioned by Baron H___, I went in.

Gas flared everywhere, yet the interior could not have been said to be well lit—each jet was sullen and secretive, as if the proprietor in whose cubicle it was located wished it to light none but his own wares. These cubicles were in no order; nor could I find any directory or guide to lead me to the one I sought. A few customers, who seemed to have visited the place for years, so that they understood where everything was, drifted from one display to the next. When they arrived at each, the proprietor came out, silent (so it seemed to me) as a specter, ready to answer questions or accept a payment; but I never heard a question asked, or saw any money tendered—the customer would finger the edge of a kitchen knife, or hold a garment up to her own shoulders, or turn the pages of some moldering book; and then put the thing down again, and go away.

At last, when I had tired of peeping into alcoves lined with booths still gloomier than the ones on the main concourse outside, I stopped at a leather merchant's and asked the man to direct me to Fräulein A___.

"I do not know her," he said.

"I am told on good authority that her business is conducted in this building, and that she buys and sells antiques."

"We have several antique dealers here. Herr M___—"

"I am searching for a young woman. Has your Herr M___ a niece or a cousin?"

"—handles chairs and chests, largely. Herr O___, near the guildhall—"

"It is within this building."

"—stocks pictures, mostly. A few mirrors. What is it you wish to buy?"

At this point we were interrupted, mercifully, by a woman from the next booth. "He wants Fräulein A___. Out of here, and to your left; past the wigmaker's, then right to the stationer's, then left again. She sells old lace."

I found the place at last, and sitting at the very back of her booth Fräulein A___ herself, a pretty, slender, timid-looking young woman. Her merchandise was spread on two tables; I pretended to examine it and found that it was not old lace she sold but old clothing, much of it trimmed with lace. After a few moments she rose and came out to talk to me, saying, "If you could tell me what you require?..." She was taller than I had anticipated, and her flaxen hair would have been very attractive if it were ever released from the tight braids coiled round her head.

"I am only looking. Many of these are beautiful—are they expensive?"

"Not for what you get. The one you are holding is only fifty marks."

"That seems like a great deal."

"They are the fine dresses of long ago—for visiting, or going to the ball. The dresses of wealthy women of aristocratic taste. All are like new; I will not handle anything else. Look at the seams in that one you hold, the tiny stitches all done by hand. Those were the work of dressmakers who created only four or five in a year, and worked twelve and fourteen hours a day, sewing at the first light, and continuing under the lamp, past midnight."

I said, "I see that you have been crying, Fräulein. Their lives were indeed miserable, though no doubt there are people today who suffer equally."

"No doubt there are," the young woman said. "I, however, am not one of them." And she turned away so that I should not see her tears.

"I was informed otherwise."

She whirled about to face me. "You know him? Oh, tell him I am not a wealthy woman, but I will pay whatever I can. Do you really know him?"

"No." I shook my head. "I was informed by your own police."

She stared at me. "But you are an outlander. So is he, I think."

"Ah, we progress. Is there another chair in the rear of your booth? Your police are not above going outside your own country for help, you see, and we should have a little talk."

"They are not our police," the young woman said bitterly, "but I will talk to you. The truth is that I would sooner talk to you, though you are French. You will not tell them that?"

I assured her that I would not; we borrowed a chair from the flower stall across the corridor, and she poured forth her story.

"My father died when I was very small. My mother opened this booth to earn our living—old dresses that had belonged to her own mother were the core of her original stock. She died two years ago, and since that time I have taken charge of our business and used it to support myself. Most of my sales are to collectors and theatrical companies. I do not make a great deal of money, but I do not require a great deal, and I have managed to save some. I live alone at Number 877 ___strasse; it is an old house divided into six apartments, and mine is the gable apartment."

"You are young and charming," I said, "and you tell me you have a little money saved. I am surprised you are not married."

"Many others have said the same thing."

"And what did you tell them, Fräulein?"

"To take care of their own affairs. They have called me a

manhater—Frau G___, who has the confections in the next corridor but two, called me that because I would not receive her son. The truth is that I do not care for people of either sex, young or old. If I want to live by myself and keep my own things to myself, is not it my right to do so?"

"I am sure it is; but undoubtedly it has occurred to you that this person you fear so much may be a rejected suitor who is taking his revenge on you."

"But how could he enter and control my dreams?"

"I do not know, Fräulein. It is you who say that he does these things."

"I should remember him, I think, if he had ever called on me. As it is, I am quite certain I have seen him somewhere, but I cannot recall where. Still..."

"Perhaps you had better describe your dream to me. You have the same one again and again, as I understand it?"

"Yes. It is like this. I am walking down a dark road. I am both frightened and pleasurably excited, if you know what I mean. Sometimes I walk for a long time, sometimes for what seems to be only a few moments. I think there is moonlight, and once or twice I have noticed stars. Anyway, there is a high, dark hedge, or perhaps a wall, on my right. There are fields to the left, I believe. Eventually I reach a gate of iron bars, standing open—it's not a large gate for wagons or carriages, but a small one, so narrow I can hardly get through. Have you read the writings of Dr. Freud of Vienna? One of the women here mentioned once that he had written concerning dreams, and so I got them from the library, and if I were a man I am sure he would say that entering that gate meant sexual commerce. Do you think I might have unnatural leanings?" Her voice had dropped to a whisper.

"Have you ever felt such desires?"

"Oh, no. Quite the reverse."

"Then I doubt it very much," I said. "Go on with your dream. How do you feel as you pass through the gate?"

"As I did when walking down the road, but more so—more frightened, and yet happy and excited. Triumphant, in a way."

"Go on."

"I am in the garden now. There are fountains playing, and nightingales singing in the willows. The air smells of lilies, and a cherry tree in blossom looks like a giantess in her bridal gown. I walk on a straight, smooth path; I think it must be paved with marble chips, because it is white in the moonlight. Ahead of me is the *Schloss*—a great building. There is music coming from inside."

"What sort of music?"

"Magnificent—joyous, if you know what I am trying to say, but not the tinklings of a theater orchestra. A great symphony. I have never been to the opera at Bayreuth; but I think it must be like that—yet a happy, quick tune."

She paused, and for an instant her smile recovered the remembered music. "There are pillars, and a grand entrance, with broad steps. I run up—I am so happy to be there—and throw open the door. It is brightly lit inside; a wave of golden light, almost like a wave from the ocean, strikes me. The room is a great hall, with a high ceiling. A long table is set in the middle and there are hundreds of people seated at it, but one place, the one nearest me, is empty. I cross to it and sit down; there are beautiful golden loaves on the table, and bowls of honey with roses floating at their centers, and crystal carafes of wine, and many other good things I cannot remember when I awake. Everyone is eating and drinking and talking, and I begin to eat too."

I said, "It is only a dream, Fräulein. There is no reason to weep."

"I dream this each night—I have dreamed so every night for months."

"Go on."

"Then he comes. I am sure he is the one who is causing me to dream like this because I can see his face clearly, and remember it when the dream is over. Sometimes it is very vivid for an hour or more after I wake—so vivid that I have only to close my eyes to see it before me."

"I will ask you to describe him in detail later. For the present, continue with your dream."

"He is tall, and robed like a king, and there is a strange crown on his head. He stands beside me, and though he says nothing, I know that the etiquette of the place demands that I rise and face him. I do this. Sometimes I am sucking my fingers as I get up from his table."

"He owns the dream palace, then."

"Yes, I am sure of that. It is his castle, his home; he is my host. I stand and face him, and I am conscious of wanting very much to please him, but not knowing what it is I should do."

"That must be painful."

"It is. But as I stand there, I become aware of how I am clothed, and—"

"How are you clothed?"

"As you see me now. In a plain, dark dress—the dress I wear here at the arcade. But the others—all up and down the hall, all up and down the table—are wearing the dresses I sell here. These dresses." She held one up for me to see, a beautiful creation of many layers of lace, with buttons of polished jet. "I know then that I cannot remain; but the king signals to the others, and they seize me and push me toward the door."

"You are humiliated then?"

"Yes, but the worst thing is that I am aware that he knows that I could never drive myself to leave, and he wishes to spare me the struggle. But outside—some terrible beast has entered the garden. I smell it—like the hyena cage at the *Tiergarten*—as the door opens. And then I wake up."

"It is a harrowing dream."

"You have seen the dresses I sell. Would you credit it that for weeks I slept in one, and then another, and then another of them?"

"You reaped no benefit from that?"

"No. In the dream I was clad as now. For a time I wore the dresses always—even here to the stall, and when I bought food at the market. But it did no good."

"Have you tried sleeping somewhere else?"

"With my cousin who lives on the other side of the city. That made no difference. I am certain that this man I see is a real man. He is in my dream, and the cause of it; but he is not sleeping."

"Yet you have never seen him when you are awake?"

She paused, and I saw her bite at her full lower lip. "I am certain I have."

"Ah!"

"But I cannot remember when. Yet I am sure I have seen him—that I have passed him in the street."

"Think! Does his face associate itself in your mind with some particular section of the city?"

She shook her head.

When I left her at last, it was with a description of the Dream-Master less precise than I had hoped, though still detailed. It tallied in almost all respects with the one given me by Baron H___; but that proved nothing, since the baron's description might have been based largely on Fräulein A___'s.

The bank of Herr R___ was a private one, as all the greatest banks in Europe are. It was located in what had once been the town house of some noble family (their arms, overgrown now with ivy, were still visible above the door) and bore no identification other than a small brass plate engraved with the names of Herr R___ and his partners. Within, the atmosphere was more dignified—even if, perhaps, less tasteful—than it could possibly have been in the noble family's time. Dark pictures in gilded frames lined the walls, and the clerks sat at inlaid tables upon chairs upholstered in tapestry. When I asked for Herr R___, I was told that it would be impossible to see him that afternoon; I sent in a note with a sidelong allusion to "unquiet dreams," and within five minutes I was ushered into a luxurious office that must once have been the bedroom of the head of the household.

Herr R___ was a large man—tall, and heavier (I thought) than his physician was likely to have approved. He appeared to be about fifty;

there was strength in his wide, fleshy face; his high forehead and capacious cranium suggested intellect; and his small, dark eyes, forever flickering as they took in the appearance of my person, the expression of my face, and the position of my hands and feet, ingenuity.

No pretense was apt to be of service with such a man, and I told him flatly that I had come as the emissary of Baron H___, that I knew what troubled him, and that if he would cooperate with me I would help him if I could.

"I know you, monsieur," he said, "by reputation. A business with which I am associated employed you three years ago in the matter of a certain mummy." He named the firm. "I should have thought of you myself."

"I did not know that you were connected with them."

"I am not, when you leave this room. I do not know what reward Baron H___ has offered you should you apprehend the man who is oppressing me, but I will give you, in addition to that, a sum equal to that you were paid for the mummy. You should be able to retire to the south then, should you choose, with the rent of a dozen villas."

"I do not choose," I told him, "and I could have retired long before. But what you just said interests me. You are certain that your persecutor is a living man?"

"I know men." Herr R___ leaned back in his chair and stared at the painted ceiling. "As a boy I sold stuffed cabbage-leaf rolls in the street—did you know that? My mother cooked them over wood she collected herself where buildings were being demolished, and I sold them from a little cart for her. I lived to see her with half a score of footmen and the finest house in Lindau. I never went to school; I learned to add and subtract in the streets—when I must multiply and divide I have my clerk do it. But I learned men. Do you think that now, after forty years of practice, I could be deceived by a phantom? No, he is a man—let me confess it, a stronger man than I—a man of flesh and blood and brain, a man

I have seen somewhere, sometime, here in this city—and more than once."

"Describe him."

"As tall as I. Younger—perhaps thirty or thirty-five. A brown, forked beard, so long." (He held his hand about fifteen centimeters beneath his chin.) "Brown hair. His hair is not yet grey, but I think it may be thinning a little at the temples."

"Don't you remember?"

"In my dream he wears a garland of roses—I cannot be sure."

"Is there anything else? Any scars or identifying marks?"

Herr R___ nodded. "He has hurt his hand. In my dream, when he holds out his hand for the money, I see blood in it—it is his own, you understand, as though a recent injury had reopened and was beginning to bleed again. His hands are long and slender—like a pianist's."

"Perhaps you had better tell me your dream."

"Of course." He paused, and his face clouded, as though to recount the dream were to return to it. "I am in a great house. I am a person of importance there, almost as though I were the owner; yet I am not the owner—"

"Wait," I interrupted. "Does this house have a banquet hall? has it a pillared portico, and is it set in a garden?"

For a moment Herr R___'s eyes widened. "Have you also had such dreams?"

"No," I said. "It is only that I think I have heard of this house before. Please continue."

"There are many servants—some work in the fields beyond the garden. I give instructions to them—the details differ each night, you understand. Sometimes I am concerned with the kitchen, sometimes with the livestock, sometimes with the draining of a field. We grow wheat, principally, it seems; but there is a vineyard too, and a kitchen garden. And of course the house itself must be cleaned and swept and kept in repair. There is no wife; the owner's mother lives with us, I think, but she does not much concern herself with the

housekeeping—that is up to me. To tell the truth, I have never actually seen her, though I have the feeling that she is there."

"Does this house resemble the one you bought for your own mother in Lindau?"

"Only as one large house must resemble another."

"I see. Proceed."

"For a long time each night I continue like that, giving orders, and sometimes going over the accounts. Then a servant, usually it is a maid, arrives to tell me that the owner wishes to speak to me. I stand before a mirror—I can see myself there as plainly as I see you now—and arrange my clothing. The maid brings rose-scented water and a cloth, and I wipe my face; then I go in to him.

"He is always in one of the upper rooms, seated at a table with his own account book spread before him. There is an open window behind him, and through it I can see the top of a cherry tree in bloom. For a long time—oh, I suppose ten minutes—I stand before him while he turns over the pages of his ledger."

"You appear somewhat at a loss, Herr R___—not a common condition for you, I believe. What happens then?"

"He says, 'You owe...'" Herr R___ paused. "That is the problem, monsieur, I can never recall the amount. But it is a large sum. He says, 'And I must require that you make payment at once.'

"I do not have the amount, and I tell him so. He says, 'Then you must leave my employment.' I fall to my knees at this and beg that he will retain me, pointing out that if he dismisses me I will have lost my source of income, and will never be able to make payment. I do not enjoy telling you this, but I weep. Sometimes I beat the floor with my fists."

"Continue. Is the Dream-Master moved by your pleading?"

"No. He again demands that I pay the entire sum. Several times I have told him that I am a wealthy man in this world, and that if only he would permit me to make payment in its currency, I would do so immediately."

"That is interesting—most of us lack your presence of mind in our nightmares. What does he say then?"

"Usually he tells me not to be a fool. But once he said, 'That is a dream—you must know it by now. You cannot expect to pay a real debt with the currency of sleep.' He holds out his hand for the money as he speaks to me. It is then that I see the blood in his palm."

"You are afraid of him?"

"Oh, very much so. I understand that he has the most complete power over me. I weep, and at last I throw myself at his feet—with my head under the table, if you can credit it, crying like an infant.

"Then he stands and pulls me erect, and says, 'You would never be able to pay all you owe, and you are a false and dishonest servant. But your debt is forgiven, forever.' And as I watch, he tears a leaf from his account book and hands it to me."

"Your dream has a happy conclusion, then."

"No. It is not yet over. I thrust the paper into the front of my shirt and go out, wiping my face on my sleeve. I am conscious that if any of the other servants should see me, they will know at once what has happened. I hurry to reach my own counting room; there is a brazier there, and I wish to burn the page from the owner's book."

"I see."

"But just outside the door of my own room, I meet another servant—an upper-servant like myself, I think, since he is well dressed. As it happens, this man owes me a considerable sum of money, and to conceal from him what I have just endured, I demand that he pay at once." Herr R___ rose from his chair and began to pace the room, looking sometimes at the painted scenes on the walls, sometimes at the Turkish carpet at his feet. "I have had reason to demand money like that often, you understand. Here in this room.

"The man falls to his knees, weeping and begging for additional time; but I reach down, like this, and seize him by the throat."

"And then?"

"And then the door of my counting room opens. But is is not my counting room with my desk and the charcoal brazier, but the

owner's own room. He is standing in the doorway, and behind him I can see the open window, and the blossoms of the cherry tree."

"What does he say to you?"

"Nothing. He says nothing to me. I release the other man's throat, and he slinks away."

"You awaken then?"

"How can I explain it? Yes, I wake up. But first we stand there; and while we do I am conscious of...certain sounds."

"If it is too painful for you, you need not say more."

Herr R___ drew a silk handkerchief from his pocket and wiped his face. "How can I explain?" he said again. "When I hear those sounds, I am aware that the owner possesses certain other servants, who have never been under my direction. It is as though I have always known this, but had no reason to think of it before."

"I understand."

"They are quartered in another part of the house—in the vaults beneath the wine cellar, I think sometimes. I have never seen them, but I know—then—that they are hideous, vile and cruel; I know too that he thinks me but little better than they, and that as he permits me to serve him, so he allows them to serve him also. I stand—we stand—and listen to them coming through the house. At last a door at the end of the hall begins to swing open. There is a hand like the paw of some filthy reptile on the latch."

"Is that the end of the dream?"

"Yes." Herr R___ threw himself into his chair again, mopping his face.

"You have this experience each night?"

"It differs," he said slowly, "in some details."

"You have told me that the orders you give the under-servants vary."

"There is another difference. When the dreams began, I woke when the hinges of the door at the passage-end creaked. Each night now the dream endures a moment longer. Perhaps a tenth of a second. Now I see the arm of the creature who opens that door, nearly to the elbow."

I took the address of his home, which he was glad enough to give me, and leaving the bank made my way to my hotel.

When I had eaten my roll and drunk my coffee the next morning, I went to the place indicated by the card given me by Baron H___, and in a few minutes was sitting with him in a room as bare as those tents from which armies in the field are cast into battle. "You are ready to begin the case this morning?" he asked.

"On the contrary. I have already begun; indeed, I am about to enter a new phase of my investigation. You would not have come to me if your Dream-Master were not torturing someone other than the people whose names you gave me. I wish to know the identity of that person, and to interrogate him."

"I told you that there were many other reports. I—"

"Provided me with a list. They are all of the petite bourgeoisie, when they are not persons still less important. I believed at first that it might be because of the urgings of Herr R___ that you engaged me, but when I had time to reflect on what I know of your methods, I realized that you would have demanded that he provide my fee had that been the case. So you are sheltering someone of greater importance, and I wish to speak to him."

"The Countess—" Baron H___ began.

"Ah!"

"The Countess herself has expressed some desire that you should be presented to her. The Count opposes it."

"We are speaking, I take it, of the governor of this province?"

The Baron nodded. "Of Count von V___. He is responsible, you understand, only to the Queen Regent herself."

"Very well. I wish to hear the Countess, and she wishes to talk with me. I assure you, Baron, that we will meet; the only question is whether it will be under your auspices."

The Countess, to whom I was introduced that afternoon, was a woman in her early twenties, deep-breasted and somber-haired, with

skin like milk, and great dark eyes welling with fear and (I thought) pity, set in a perfect oval face.

"I am glad you have come, monsieur. For seven weeks now our good Baron H___ has sought this man for me, but he has not found him."

"If I had known my presence here would please you, Countess, I would have come long ago, whatever the obstacles. You then, like the others, are certain it is a real man we seek?"

"I seldom go out, monsieur. My husband feels we are in constant danger of assassination."

"I believe he is correct."

"But on state occasions we sometimes ride in a glass coach to the *Rathaus.* There are uhlans all around us to protect us then. I am certain that—before the dreams began—I saw the face of this man in the crowd."

"Very well. Now tell me your dream."

"I am here, at home—"

"In this palace, where we sit now?"

She nodded.

"That is a new feature, then. Continue, please."

"There is to be an execution. In the garden." A fleeting smile crossed the Countess's lovely face. "I need not tell you that that is not where the executions are held; but it does not seem strange to me when I dream.

"I have been away, I think, and have only just heard of what is to take place. I rush into the garden. The man Baron H___ calls the Dream-Master is there, tied to the trunk of the big cherry tree; a squad of soldiers faces him, holding their rifles; their officer stands beside them with his saber drawn, and my husband is watching from a pace or two away. I call out for them to stop, and my husband turns to look at me. I say: 'You must not do it, Karl. You must not kill this man.' But I see by his expression that he believes that I am only a foolish, tender-hearted child. Karl is...several years older than I."

"I am aware of it."

"The Dream-Master turns his head to look at me. People tell me that my eyes are large—do you think them large, monsieur?"

"Very large, and very beautiful."

"In my dream, quite suddenly, his eyes seem far, far larger than mine, and far more beautiful; and in them I see reflected the figure of my husband. Please listen carefully now, because what I am going to say is very important, though it makes very little sense, I am afraid."

"Anything may happen in a dream, Countess."

"When I see my husband reflected in this man's eyes, I know—I cannot say how—that it is this reflection, and not the man who stands near me, who is the real Karl. The man I have thought real is only a reflection of that reflection. Do you follow what I say?"

I nodded. "I believe so."

"I plead again: 'Do not kill him. Nothing good can come of it....' My husband nods to the officer, the soldiers raise their rifles, and...and..."

"You wake. Would you like my handkerchief, Countess? It is of coarse weave; but it is clean, and much larger than your own."

"Karl is right—I am only a foolish little girl. No, monsieur, I do not wake—not yet. The soldiers fire. The Dream-Master falls forward, though his bonds hold him to the tree. And Karl flies to bloody rags beside me."

On my way back to my hotel, I purchased a map of the city; and when I reached my room I laid it flat on the table there. There could be no question of the route of the Countess's glass coach—straight down the Hauptstrasse, the only street in the city wide enough to take a carriage surrounded by cavalrymen. The most probable route by which Herr R___ might go from his house to his bank coincided with the Hauptstrasse for several blocks. The path Fräulein A___ would travel from her flat to the arcade crossed the Hauptstrasse at a point contained by that interval. I needed to know no more.

Very early the next morning I took up my post at the intersection.

If my man were still alive after the fusillade Count von V___ fired at him each night, it seemed certain that he would appear at this spot within a few days, and I am hardened to waiting. I smoked cigarettes while I watched the citizens of I___ walk up and down before me. When an hour had passed, I bought a newspaper from a vendor, and stole a few glances at its pages when foot traffic was light.

Gradually I became aware that I was watched—we boast of reason, but there are senses over which reason holds no authority. I did not know where my watcher was, yet I felt his gaze on me, whichever way I turned. So, I thought, you know me, my friend. Will I too dream now? What has attracted your attention to a mere foreigner, a stranger, waiting for who-knows-what at this corner? Have you been talking to Fräulein A___? Or to someone who has spoken with her?

Without appearing to do so, I looked up and down both streets in search of another lounger like myself. There was no one—not a drowsing grandfather, not a woman or a child, not even a dog. Certainly no tall man with a forked beard and piercing eyes. The windows then—I studied them all, looking for some movement in a dark room behind a seemingly innocent opening. Nothing.

Only the buildings behind me remained. I crossed to the opposite side of the Hauptstrasse and looked once more. Then I laughed.

They must have thought me mad, all those dour burghers, for I fairly doubled over, spitting my cigarette to the sidewalk and clasping my hands to my waist for fear my belt would burst. The presumption, the impudence, the brazen insolence of the fellow! The stupidity, the wonderful stupidity of myself, who had not recognized his old stories! For the remainder of my life now, I could accept any case with pleasure, pursue the most inept criminal with zest, knowing that there was always a chance he might outwit such an idiot as I.

For the Dream-Master had set up His own picture, and full-length and in the most gorgeous colors, in His window. Choking and spluttering I saluted it, and then, still filled with laughter, I crossed

the street once more and went inside, where I knew I would find Him. A man awaited me there—not the one I sought, but one who understood Whom it was I had come for, and knew as well as I that His capture was beyond any thief-taker's power. I knelt, and there, though not to the satisfaction I suppose of Baron H___, Fräulein A___, Herr R___, and the Count and Countess von V___, I destroyed the Dream-Master as He has been sacrificed so often, devouring His white, wheaten flesh that we might all possess life without end.

Dear people, dream on.

Poems

British Soldier near Rapier Antiaircraft Missile Battery Scans for the Enemy

I know you, my old friend! My God, to see you now...
Buck? Buck, is this the end? Why, I remember how
Poor Grandma saved you every Sunday,
Knowing her son would bring me someday;
How she would laugh her gentle cookie laughter,
To see me jump around and holler after
I'd finished you and Flash—the way I'd dash
In spaceships only I could see.

I mean, of course, that only I could see
Them then. Buck, my old friend,
It's good to see you, end or no.
We all must go
Into the trash at last.
(Gosh, didn't we go fast!)
How was the climb, from Grandma's to a page in *Time*?

Last Night in the Garden of Forking Tongues

Old blind brick poet
Telling of his journey:
"I feel it, I know it,
Though I cannot see
Rhine or Nile. All the while,
The waters seep to me.
You see?"

We see, or say we see.
Mocking his politics,
Playing word tricks.
(Oh, God! Please banish
Forever high-school Spanish.)

Me? I see
Him tease with Heine.
The Nile, the Rhine
Grow watery mazes,
As when he praises
Our English. (*Dim*'s
A lovely word, according to him.)

Clearer and clearer
Is his mocking mirror;
Mirror-mocking's his, *si*,
Clearer and clearer.
So famous for his
Mazes is Senior Borges.

The Computer Iterates the Greater Trumps

DIMENSION Trumps (21)
Do 1969 I = 1, 22
N = 22 - I
Trump (N)

Trump (21)
The *Universe* includes by definition all
That Man has seen since his great fall.
God's calling card this, upon our silver Disch,
On what table? In what house? In what hall?

Trump (20)
The *666t Judgement,* and my screed betrays
Unlearnt foreknowledge of those coming days.
The angels come to smite the sea and land,
The anti-Christ for us—and slays.

Trump (19)
The *Sun* the dancing children love,
Casts down his radiance from above.
Fusion, fission, no remission;
So small a house, so large a stove.

Trump (18)
The *Moon,* stillborn sister of our Earth,
Pale-faced observes the living birth.
Soon, soon, the sister's children come,
To plow and plant that stony turf.

Trump (17)
The *Star,* sky-ruler by default,
Pours out two waters: fresh and salt.
Naked, bare-breasted girl, and (whisper)
Magna Mater of the Old Cult.

Trump (16)
The *Falling Tower,* smote by God,
Thunders in ruins to the sod.
Master, it needs no wit to read this card.
Master, you must wait his rod.

Trump (15)
The *Devil* straddles his searing throne,
With power in his hands alone!
He says.
We have been shown; we have been shown; we have been shown.

Trump (14)
Death in this deck's no gibb'ring shade,
But naked peasant with a blade;
Think on that, thou unfought people! and
Remember whence these cards were made.

Trump (13)
The *Hanged Man* hangs by his feet,
Knew you that? His face, so sweet,
Almost a boy's.
He hangs to bleed. Who waits to eat?

Trump (12)
The *Wheel of Fortune;* cause and effect;
God will save his own elect;
The wheel turns until it stops—
The bitch within runs till she drops.

Trump (11)
Sworded *Justice* weighs us men,
Then, sordid, weighs us up again.
Weren't not more justice just to slay?
Slaying sans guilt to slay again?

Trump (10)
Fortitude, with hands like laws,
Clamps shut the writhing lion's jaws;
Ignoring his beseeching eyes,
Ignoring his imploring paws.

Trump (9)
Taking two hands in the Tarot game,
Temperance, with *Time* her other name.
Pouring light into a golden cup.
Watering our wine. Drowning our fame.

Trump (8)
The *Hermit* with his lamp and staff,
Treads all alone his lonely path.
He who hath no one,
Know you who he hath?

Trump (7)
The *Lovers* mean birth as well as lust,
Read ye that riddle as ye must;
Men from semen, O ye people!
Dust from dust from dust from dust.

Trump (6)
The *Chariot*'s a Gypsy car,
And we the happy drivers are,
With whip and reins and endless pains,
So far, so far, so far.

Trump (5)
The *Emperor* for worldly power,
To shake and scream a fleeting hour;
To this a bribe, to that a bullet—
Remember, Master, the *Falling Tower?*

Trump (4)
The *Hierophant,* the *Pope,* the *Priest;*
Today we fast, tomorrow, feast.
The bridegroom was with us yesterday;
The *Hierophant* remains, at least.

Trump (3)
The *Lady Hierophant,* good *Pope Joan,*
Who will not let the truth alone;
A scholar killed her yestereve,
Today she's sidling toward the throne.

Trump (2)
The *Empress, Nature,* loving and cruel,
Grim mistress of the one hard school,
Mistress of microbes,
Breaking each tool.

Trump (1)
The *Juggler* points both down and up, in mastery of confusion;
First in all the deck stands he, creator of illusion.
Sword, coin and cup before him lie,
And on his face, derision.

Trump (0)
*******FOOL*******
errorerrorerrorerror
23232323232323232323

The Anatomy of a Robot

Industrial robots can be divided into two major groups. Servo robots have some means of feeding the robot's position back to the device that controls the robot's motions. Nonservo robots do not; their positions are governed by mechanical stops, and the robots are "reprogrammed" by adjusting the stops. Although nonservo robots can be applied to many pick-and-place jobs at a lower cost than servo robots, the majority of industrial robots are of the servo type. A plant engineer who understands how servo robots are built will have no difficulty with the much simpler non-servo designs. The accompanying section, "How To Speak Robot," provides an introduction to robotic terminology.

Robots are often thought of as mechanical men. If a servo robot is considered in this way, it consists of a "skeleton" that provides rigidity and load-bearing capacity, "muscles" that produce movement, a "brain" that governs its movements, "sense organs" that supply information to the brain, and a "hand" or "hands" (sometimes as unhandlike as a welding torch) that permit it to do work. To these major part groups must be added minor ones such as "skin" in the form of removable covers to protect the parts beneath from the environment, a "circulatory system" to supply energy to the muscles, "joints" to permit articulation, and so on. (However, the covers, cables, hoses, bearings, ballscrews, and other minor parts used in robots seldom give trouble and are no different from similar parts in other machines.) The sum of all these major and minor

parts, which may differ radically from one design to the next, constitutes the anatomy of a robot.

"Skeleton"—The living creatures we are most prone to think of when drawing comparisons to a robot (dogs, horses, human beings, and so on) have endoskeletons, in which the supporting members are inside the body. A few robots are built that way, but most robots have an exoskeleton like a lobster's or a grasshopper's. Their supporting members are outside their bodies and serve as their "skins" as well as their "bones." There are also robots that use both systems, as a turtle does.

External supporting members have the advantage of simplicity; few covers are required. The external members are usually steel castings. Internal supporting members make maintenance easy; less work is needed to take off a few light covers than to disassemble part of the robot.

Most industrial robots have only a single "arm" supported by a rigid base; a few have two or more. For some robots legs are on the way.

"Muscles"—Three quite different systems are used to provide the force that allows a robot to work. Robots are usually classified by this characteristic as pneumatic, hydraulic, or electric. Virtually all pneumatic and hydraulic robots use electrical controls, however, and even "all-electric" robots often use air-operated end-effectuator "hands."

Pneumatic robots usually employ vane motors, and often combine them with cylinders. Both the motors and the cylinders may be standard components that can be serviced on the robot as on any other machine. Each such component represents a degree of freedom—that is, a way in which the robot can move, either by extending or retracting a cylinder or by rotating a motor-driven joint.

This concept of degrees of freedom is applied to robots of all types, not merely to pneumatic ones. Some robots have as few as two degrees of freedom, many have five or six, and one Cybotech painting

robot has seven. The more degrees of freedom a robot has, the greater is its access to the area (called the work envelope) within its reach. Each additional degree of freedom requires a motor or cylinder with the means of controlling it, and thus increases the cost of the robot.

Hydraulic robots use hydraulic motors and cylinders much as pneumatic robots use pneumatic motors and cylinders. In most cases, these motors and cylinders are controlled by servo valves, a system that permits smooth motions as well as high lifting capacity. However, some hydraulic robots control their motors and cylinders with mechanical stops.

In addition, a hydraulic robot requires a hydraulic power unit either some distance from the robotic arm or built into the base. This power unit includes a pump, a reservoir, one or more filters, valving, and other parts. Fundamentally, the hydraulic power system of a hydraulic robot is very similar to that of a numerically controlled machine tool; it operates and is serviced in much the same way.

Electric robots are powered by servomotors or stepping motors. A servomotor is driven by a signal whose strength depends on the difference between the armature's position and the desired position, on the difference between the armature's velocity and the desired velocity, or on both. When motors of this third type are used, no additional signal is needed to tell the robot's "brain" the condition of its arm (or arms).

Stepping motors are electric motors that move incrementally; the most common increment is 0.05 revolution. When stepping motors are used, the "brain" must be fed back the position (and in the more advanced robots, the speed) of the arm by some other means.

Most electric robots are equipped with DC motors. A few use AC motors. A new brushless motor especially designed for robotic applications can be operated with DC or variable-frequency AC.

Like other machines that move heavy loads, robots often require some means of holding the load in position in the event of a power

failure. In hydraulic robots this is accomplished by servovalves that block all ports. Electric and pneumatic robots use fail-safe brakes.

"Brain"—In highly sophisticated automated manufacturing, a single mainframe computer may serve as the "brain" of several robots, as well as machine tools, conveyors, and so on. In smaller systems, a minicomputer may take the place of the mainframe computer. In both these setups, individual robots are likely to be equipped with their own microcomputers. Stand-alone robots may use microcomputers or one or more programmable controllers. In the great majority of cases, the robot's "brain" is separated from his base and "arm" by 6 ft. or more; but the pneumatic International Robomation/Intelligence robot features an onboard microcomputer. An onboard "brain" saves money by eliminating the need for an additional cabinet and linking cables; it also eliminates the risk that the cables may be cut by a passing forklift.

"Sense Organs"—The fundamental invention that made robots possible was a means of allowing the "brain" to "feel" the motions of its "arm" and "hand." (We human beings have this sense too, though we seldom think about it; it is called *kinesthesia.*)

As mentioned previously, this information is provided in most electric robots by the servomotors. In others, and in all hydraulic and pneumatic servo robots, the kinesthetic sense is supplied by encoders, potentiometers, resolvers, or tachometers, singly or in combination. In the simplest designs, the feedback they supply consists only of position; in more sophisticated robots, it includes velocity as well.

A second "sense organ" found in all but the most primitive robots is a means of permitting the programmer to communicate with the robot. It is tempting to call this the robot's "ear," but in actuality it resembles the Braille books read by the blind: Commands, and in some cases numbers, are all that the robot can "hear." In most designs this means consists of a keyboard mounted on the "brain" cabinet, a teach pendant, or both.

Although well over 90 percent of the industrial robots sold today

are deaf, dumb, and blind, that is only because robots without hearing, speech, and vision can do so many monotonous, dirty, and bangerous jobs. It is liable to be a long time before robots understand speech, but the ability to detect mere noises can easily be provided; so can a speech synthesizer that will permit a robot to talk.

Vision is much more apt to be useful to a robot than hearing or speech; and vision, too, can be supplied. A TV camera (nearly always black-and-white) becomes the robot's "eye." Because the signal can be transmitted by cable without difficulty, the "eye" can be put wherever it is most valuable. Fiber optics provide an "eye" for one welding robot that is positioned just behind the welding gun, where it can watch the joint but is sheltered from the glare of the arc. HRC Consultants, a company involved in the design of robotic grippers, feels the best place for a robot's "eye" may be in the palm of its "hand."

The simplest vision systems interpret only silhouettes, but more sophisticated ones can distinguish between many shades of gray. Not long ago, a typical vision system cost around $30,000, but prices have been coming down. An announced system with 256 gray levels will sell (in quantity) for less than $5000. Plant engineers will be seeing a lot of them at that price.

Touch seems to be a bit behind vision, but not far. When it arrives, a robot will not only know when its "hand" has contacted an object (that information can be supplied now by vision, by using the gripper to complete an electric circuit, or by mounting a miniature switch in the gripper), but know if the object begins to slip from its grasp in time to tighten its hold.

"Hands"—The robot's "hand" is both one of its most important parts and one of the most frequently overlooked. In many cases, it is not included in the price of the robot, and special engineering is required. If the hand is to be a paint spray or welding gun, the manufacturer of the spraying or welding equipment may be willing to help out. If it will be a gripper, the plant engineer must consider how it will be actuated, how much force will be required to hold the

load without crushing it, whether parallel jaws are needed, and whether two jaws will be sufficient. He should keep in mind that it may be possible and desirable to put more than one "hand" on the "arm." (At least one robot on the market now is capable of changing from one "hand" to another, without human assistance, as the nature of the job changes.) He may find what he needs in the literature of one of the companies now beginning to specialize in this field, or decide to enlist the help of a robotic consultant.

How to Speak Robot

Accuracy—the ability to make a motion with an endpoint as specified by a program. A robot with an accuracy of 0.005 in. can always put its "hand" within that distance of the coordinates specified by the program. (See *repeatability.*)
Actuator—a device that converts energy into force and motion. Electrical, hydraulic, and pneumatic motors, and hydraulic and pneumatic cylinders, are typical actuators.
Adaptability—the ability to change and correct a program without human intervention, as a result of circumstances not foreseen by the programmer. Adaptability greatly reduces the need for precise positioning of parts.
Adaptive control—a method of control in which actions are continuously adjusted in response to feedback.
Air motor—a device that converts pneumatic pressure and flow into continuous rotary or reciprocating motion.
Anthropomorphic—an adjective with the literal meaning "of human shape." An anthropomorphic robot is one that looks more or less like a human being.

Artificial intelligence—the ability of a computer to reason and learn as a human being does.
Axis—a *degree of freedom*, which see.
Binary picture—a vision-system picture in which objects are seen in silhouette only. A picture in which everything is either black or white.
Blob—a light or dark area in the image transmitted by a vision system's camera. A washer is a dark blob with a light blob in the middle.
Cartesian coordinates—another name for *rectangular coordinates*, which see.
Continuous path—movement by a robot in which the points between the points specified by the programmer, and the speed of movement, are precisely controlled by the robot's "brain." This kind of movement is important in welding and spray painting.
Controller—used loosely for a robot's "brain," whether it is a programmable controller, a microcomputer, or some other device.
Contouring—following a three-dimensional shape in space. Contouring is important in welding and spray painting. Contouring robots can also be used to perform rough milling of large shapes.
Cycle time—the time required for a robot to run through its programmed motions. A long cycle time may prevent a robot from doing a given job effectively although it can perform all the necessary functions.
Cylindrical coordinates—spatial coordinates defined by two distances and an angle. Some robots are programmed in cylindrical coordinates.
Degree of freedom—a way in which a robot can move, typically an articulated joint.
Digital image—the numerical representation of a picture seen by a TV camera "eye." A robot's "brain" analyzes this digital image to enable the robot to recognize an object.
Droop—a robot's tendency to hold a heavy load too low because of deflection in its "arm" members.
Encoder—a device that converts angular or linear position to digital signals.

End effector—a robot's "hand." It may be a welding gun, a paint spray nozzle, a pneumatic screwdriver, a gripper, or any other such device for doing work. (See *gripper.*)

Fail-safe—failure without damage or hazard. Robots are often provided with fail-safe brakes so their motions will "freeze" in the event of loss of power.

Fail-soft—slow failure to reduce damage and hazard. A fail-soft robot will slowly lower its arm in the event of loss of power.

Feature—a characteristic of an object that enables a robot with vision capability to recognize that object and determine its position. Holes and sharp corners are typical features.

Feedback—a signal resulting from an action and traveling from the acting component to the robot's "brain." Feedback permits the "brain" to determine whether the component has carried out the intended action.

Flexible manufacturing—production with machines capable of making a different product without retooling or any similar changeover. Flexible manufacturing is usually carried out with numerically controlled machine tools, robots, and conveyors under the control of a central computer.

Gantry—a bridge-like frame along which a suspended robot moves. A gantry creates a much larger work envelope than the robot would have if it were pedestal-mounted. (See *work envelope.*)

Gray-scale picture—a vision-system picture in which objects are seen in various shades of gray. (Contrast *binary picture.*)

Gripper—a robotic "hand" intended to grasp objects.

Gross load—the total load that must be lifted by the robot, including the weight of its end effector. (See *net load.*)

Intelligent robot—a robot that chooses between actions according to the way it senses its environment.

Lead through—programming by physically guiding the robot through the desired actions. The speed of the robot is increased when programming is complete.

Load capacity—the weight a robot can manipulate with a fully

extended arm. It should be noted that most robots can handle heavier loads when full arm extension is not required.

Machine vision—the capability conferred by a *vision system*, which see.

Manipulator—a robot's "arm." A robot's "hand." A robot.

Mobile robot—a robot with wheels or "legs." Mobile industrial robots will be introduced within the next few years.

Modular robot—a robot made by assembling pre-engineered modules.

Net load—the weight of a load less the weight of containers, tooling, and the end effector. Even though the net load is less than a robot's load capacity, the gross load may exceed it.

Off-line programming—programming in which the commands are stored for execution at a later time. Off-line programming is not carried out in *real-time*, which see.

Open loop—without feedback. (See *feedback*.)

Part classification—the identification of differing parts, by a robot, usually by means of vision.

Pattern recognition—identification of visual images by classification into categories. Pattern recognition is usually considered a part of *artificial intelligence*, which see.

Pick-and-place—the simplest kind of material handling application, in which a robot picks up an object at one point and places it at another.

Pitch—rotation (especially of the "hand") in a vertical plane that includes the "arm," when the "arm" is extended horizontally. (See *yaw, roll.*)

Pixel—a small element of a picture that is assumed to be a uniform shade of gray in creating the digital image. (See *digital image.*) The more pixels processed per second, the faster the robot can recognize objects. The smaller the pixels, the less chance the robot will make a mistake.

Point-to-point—simple movements in which the intermediate points (and often the rate of motion) are not controlled.

Rated load capacity—the load capacity reduced by a factor of safety. (See *load capacity.*)
Real-time—time logged on the robot. The time in which it is or could be performing work.
Rectangular coordinates—spatial coordinates defined by three distances. Some robots are programmed in rectangular coordinates.
Repeatability—the ability to repeat a motion and arrive at the same end point. A robot with a repeatability of 0.005 in. can always put the next part within that distance from where it put the last one. (See *accuracy.*)
Resolution—the smallest distance that can be understood by a robot's "brain."
Resolver—a device that converts mechanical position into an analogous electrical signal.
Robot—a programmable machine intended to perform a job originally conceived in terms of a human operator. A programmable, multifunctional manipulator. (See *manipulator.*) From the Czech *robota*, meaning *forced labor.*
Robotic—pertaining to robots.
Robotics—the science of designing, building, and applying robots.
Roll—rotation (especially of the "hand") about the geometric axis of the rotating part.
Sensor—a device that conveys information to the robot's "brain."
Servomotor—any motor that is controlled in response to a feedback signal. Typically, an electric motor; but there are hydraulic and pneumatic servomotors as well.
Shake—vibration of a robot's "arm" and "hand" during or at the end of a movement. Lack of shake is one of the hallmarks of a quality robot.
Smart sensor—a sensor whose output depends on internal data or on input from another part of the system.
Spherical coordinates—spatial coordinates defined by two angles and a distance. Some robots are programmed in spherical coordinates.
Stop—a mechanical constraint on motion.

Teach box—a hand-held control with which a robot can be programmed.
Teach pendant—a teach box connected to the robot's "brain" by a cable. (See *teach box.*)
Teleoperator—a mobile "robot" controlled by a human operator. Teleoperators are most often used in areas that would be hazardous to human beings.
Val—the Unimate programming language.
Vision system—a system, typically based on a black-and-white TV camera and a microcomputer, that allows a robot to see.
Walk through—programming by giving the robot instructions one by one, with the robot executing each before receiving the next. The speed of the robot is increased when programming is satisfactory. A teach box is usually used.
Work cell—a manufacturing unit consisting of one or more work stations. (See *work station.*)
Work envelope—the space within a robot's reach.
Work station—a manufacturing unit consisting of one robot and the machine tools, conveyors, and other equipment with which it interacts.
Working range—the distance from the center of a robot's base to the most distant part of its work envelope.
World coordinates—a coordinate system based on the plant floor.
Yaw—rotation (especially of the "hand") in a horizontal plane when the "arm" is extended horizontally.
Zero point—the origin of a coordinate system.

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